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The nasomaxillary epithelial inlay for dish face deformity

■ *John Marquis Converse, M.D., New York, and Frank E. Jeffreys, D.D.S.*

Malunited comminuted fractures of the maxilla, particularly of the portion surrounding the pyriform aperture, of the bones and cartilages of the nose and loss of the superior alveolar process may result in a deformity consisting of a retrusion of the whole nasomaxillary region. Occasionally, upward and backward displacement of the superior labial region is also present, preventing occlusion of the lips.

Marked retrusion of the middle portion of the face, or dish face deformity, is seen in syphilitics. Syphilitic lesions cause destruction of the bones and cartilage of the nose and cicatrization of these lesions is followed by shrinkage of the nasal lining. In congenital syphilis the deformity is particularly evident; underdevelopment of the nasomaxillary region explains the extreme flatness or retrusion of the middle portion of the face (Fig. 1). Aside from the deformity, destruction of the septum and turbinates and scarring of the nasal lining result in atrophic rhinitis with its attendant nasal discharge, crusting and foul odor. The repair of such deformities comprises repair not only of the nose but also of the nasomaxillary retrusion. When suitably indicated, the epithelial inlay technic is of particular value.

The essential anatomic characteristic in many of these deformities is loss of the lining of the nasal cavity. In such cases the deformity cannot be corrected by simple implantation of bone or cartilage; the restoration of an adequate nasal lining is essential. When extreme nasomaxillary retrusion is present and when loss of the upper teeth requires the wearing of a denture, it is feasible to extend the denture upward into the nasomaxillary region. This nasomaxillary prosthesis, an upward extension of the denture, fits into a skin grafted cavity and restores the contour of the soft tissues of the face. One of us (J.M.C.) has utilized this procedure in

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Commander (D. C.), U. S. Navy.

Fig. 1.—Photographs showing typical deformity caused by underdevelopment of the naso-maxillary region and cicatricial contraction of the intranasal structures

5 cases; in each of these cases it appeared impossible to achieve repair by any other method. In one case, the scar tissue resulting from 40 previous unsuccessful operations eliminated the use of any other method. Two of these cases were reported in a recently published textbook.[1]

The main objection to this technic is that it imposes the continuous wearing of an internal prosthesis; this objection is minimized when the patient is edentulous and requires a denture. The unpleasant odor and crusting characteristic of all skin-lined cavities are less objectionable than the foul emanation of purulent crusts of atrophic rhinitis customary in these cases. Frequent removal of the appliance and cleansing minimize this inconvenience. Regurgitation of fluids and food through the nasal cavity does not occur; after a few weeks the sphincter-like constriction of the orbicularis oris muscle around the prosthesis prevents the escape of fluid.

The technic used in these cases is an application of that developed by Gillies[2] (1923) and McIndoe[3] (1937).

■ *Operative Procedure*

Anesthesia is administered in intratracheal intubation, with the tube placed through the oral cavity. An incision approximately 10 cm. in length is made in the upper buccal sulcus extending on each side of the frenulum (Fig. 2, *A*). The nasal vestibules are entered and the external nose is freed from its attachments to the border of the pyriform aperture (Fig. 2, *B*). The periosteum is not incised except over the nasal spine where it is reflected and the spine resected (Fig. 2, *C*). Elimination of this protuberance is necessary in order to eliminate a point of retention interfering with removal of the mold. The scar tissue within the nose is carefully removed until the external nasal structures are freed from their adhesions

1. Kazanjian, V. H., and Converse, J. M., *The Surgical Treatment of Facial Injuries*. Baltimore: Williams & Wilkins, 1949.

2. Gillies, H. D., Deformities of the Syphilitic Nose. *Brit. M. J.* 2:977 (Nov.) 1923.

3. McIndoe, A. H., The Application of Cavity Grafting. *Surgery* 1:535 (April) 1937.

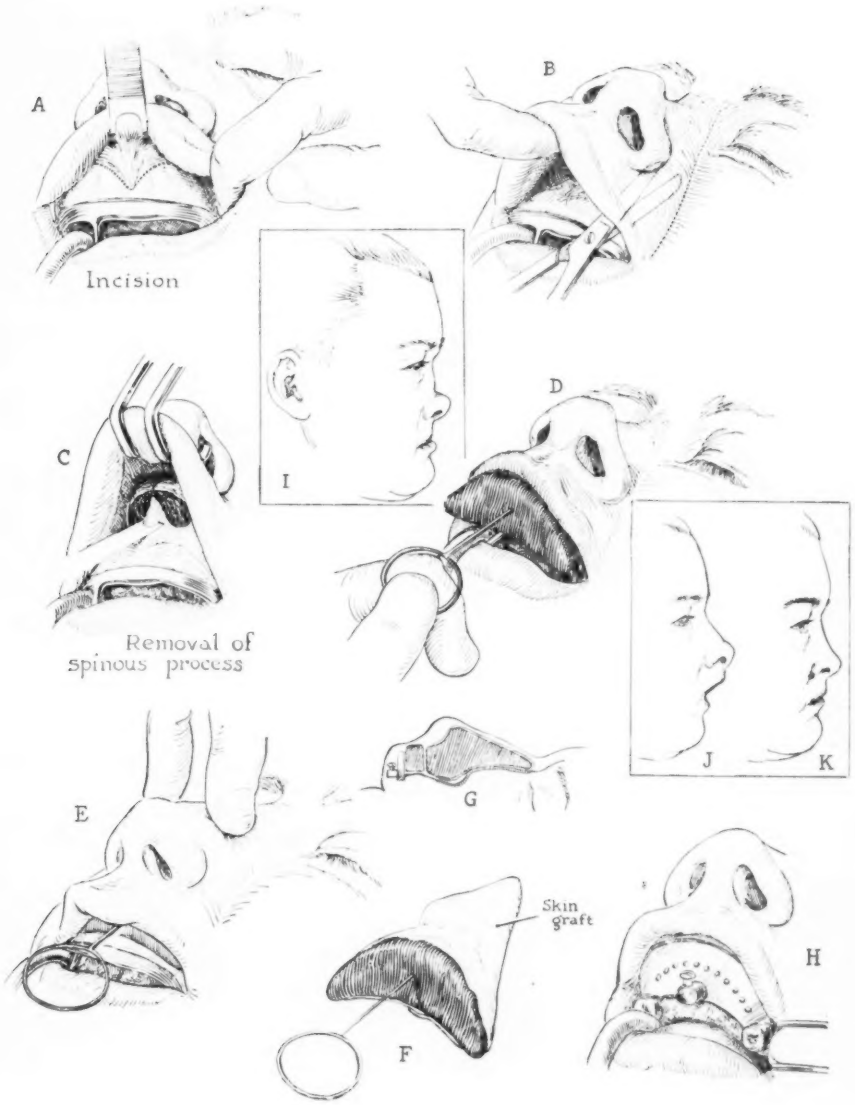


Fig. 2.—Technic of nasomaxillary epithelial inlay

and can be expanded freely. These procedures result in the formation of a pyramidal cavity, with its base inferiorly, the major portion of which shows an extensive intranasal raw area. A mold of dental compound is then constructed to fit into the expanded cavity (Fig. 2, *D* and *E*). The establishment of a pyramidal cavity, the apex pointing upward, is essential to permit easy insertion and removal of the mold. It is necessary to construct an oversized mold in order to obtain as much expansion of the nasal structures as possible and obliterate any dead space between the skin graft and the surrounding tissues. The reshaping of the nose and particularly its lengthening can be done only if the tissues have been expanded. When subsequently the mold is reduced in size the length obtained can be maintained while the width and protrusion of the mold is diminished. Walter H. Wright, the New York University College of Dentistry, suggested that the dental compound mold be duplicated immediately in a quick-curing acrylic.

■ *Technic*

To be certain that the impression of the prepared nasal cavity not be dislodged from the denture during its removal from the patient, dental compound is dry-heated and attached to the entire labial flange and to all the anterior teeth. Two cakes of dental compound are next softened in hot water, molded into a pyramid and placed apex upward, attached to the denture.

The denture is inserted into its position in the mouth while guiding and forcing the softened compound into the prepared nasal cavity. The soft compound is rapidly molded to produce distension of the nasal soft tissues; meanwhile care is taken to keep the denture firmly seated in its position. The compound is permitted to harden and it is removed with the denture. Inspection of the surface of the dental compound impression shows that it has been closely adapted to the naso-maxillary cavity.

The practicality of making a permanent prosthesis during the operation is dependent upon the speed with which the dental compound impression can be reproduced in the finished resinous material.

A mixture of quick-setting impression plaster and hot water is prepared and the denture half-flasked in it in such a manner that only the anterior surface of the dental compound is left exposed. To accelerate and facilitate later opening of the flask, this exposed surface is kept free of undercuts. This section of the metal dental flask is partially immersed in hot water to heat it as well as to hasten further the setting of the plaster. After the initial set of the plaster has occurred, a thin layer of petrolatum is spread over it and tin foil is adapted over the entire surface of the plaster and dental compound to act as a positive separating medium. The flasking operation is completed using an accelerated plaster mix and again partially immersing the flask in hot water to await the initial set of the plaster.

The flask is then opened, the compound removed and tin foil adapted to all parts of the plaster mold. A soft dough of quick-setting resin is packed into the hot mold and allowed to stand under pressure for five minutes until cured. The prosthesis is removed from the flask and pol-

ished. The total elapsed time for the laboratory technic is 20 minutes; five minutes for the flasking, five minutes to prepare and pack the mold, five minutes to cure and five minutes to remove the prosthesis from the flask and polish it.

When the proper technic is used and the procedure adequately planned, duplication of the mold in acrylic can be done in 30 to 35 minutes. While this procedure is in progress a Thiersch graft is cut from the inner aspect of the arm, an area devoid of hair follicles. When the mold is ready it is covered with the skin graft, placed raw surface outward (Fig. 2, *F*). The application of the skin graft to the mold is assisted by sticking the graft with a few dabs of dermatome cement. The mold carrying the graft is placed in the nasomaxillary cavity and is left in place for a period of 10 days after the operation (Fig. 2, *G* and *H*).

The advantages of the immediate construction of an acrylic appliance are twofold: the cleanliness of acrylic in comparison to dental compound or gutta-percha and the obvious advantage of disposing of the appliance from the beginning.

The first removal of the mold may require a general anesthetic. Difficulty in removal can be obviated by constructing a two-piece appliance. At intervals during subsequent weeks the mold is removed and diminished in size. As the mold is diminished in size, the overlying soft tissues contract; the soft tissues are guided by the modification in shape of the underlying mold. The reduction of the mold must be gradual and the final result may require a period of three or four months before the desired contour of the nose is obtained (Fig. 2, *I*, *J* and *K*). The final mold is usually an upward expansion of a denture and it is hollowed in order to insure adequate nasal airways. After completion of treatment, the patient shown in Figure 1 demonstrates the appliance which was constructed for her (Fig. 3).

Fig. 3.—After completion of the treatment the patient demonstrates her appliance

■ *Summary*

The indications and technic of cavity skin grafting by the epithelial inlay technic in dish face deformities resulting from destruction of bone, cartilage and nasal lining in the nasomaxillary region are discussed. A technic for the immediate construction of an appliance, using quick-curing acrylic, is described.—568 *Park Avenue.*

Cysts of the jaws

■ *Irving Salman, D.D.S., New York*

Cysts of the jaws fall into two main categories, odontogenic and nonodontogenic. Clinically three distinct pictures are seen. In the first picture, the most prevalent, there are no symptoms present. The cysts are discovered by routine roentgenographic examination. In the second picture the cyst has bulged or expanded either one or both plates of bone. The overlying bone has been thinned out to a cardboard or eggshell-like consistency and, when palpated, there is a crackling feeling. In the third group one or both plates of bone have been destroyed and fluctuation of the fluid within the cystic membrane can be felt on palpation.

Cysts may occur as a familial disease. I have seen cysts in several members of one family. Thoma[1] and Blumenthal reported the occurrence of cysts in four generations of a family of 30 members; 12 had one to three cysts each; 14 had none and 4 were not available for examination. Certain individuals have a predilection for cystic formations. Cysts will form at the apexes of infected and nonvital teeth in some patients, while in others nonvital teeth will be clinically and roentgenographically negative. In still others granulomas will form at the apexes of infected and nonvital teeth.

The odontogenic cysts are subdivided into radicular, or dental root, cysts and dentigerous, or follicular, cysts. The radicular or dental root cyst, as the name implies, is due to infection from a tooth or teeth, and is the more common of the two. It originates from the epithelial rests of Malassez (Hertwig's sheath). The radicular cyst can be unilocular or multilocular, and is found in any part of the upper or lower jaw or both. When seen in an edentulous area they are spoken of as residual cysts.

■ *Radicular Cysts*

The radicular cyst will reveal a well defined radiolucent area roentgenographically, with a white line about its periphery, involving one or more teeth and extending to various sizes. Although the diagnosis roentgenographically is not too difficult it must be differentiated from traumatic or hemorrhagic cysts and, if seen in the upper anterior region, from the median palatine cyst; if multilocular in nature it must be differentiated from the giant cell, central type, localized osteitis fibrosa, myxoma and ameloblastoma. The treatment is either removal of the teeth involved and enucleation of the cyst or the conservative surgical approach, which is apicoectomy and enucleation of the cyst. For this conservative method the location of the cyst must be considered, the age of the patient and the amount of healthy supporting bone about the tooth or

Assistant professor of oral surgery, New York University College of Dentistry, New York.

1. Thoma, Kurt H., *Oral Surgery*. St. Louis: The C. V. Mosby Company, 1948, vol. 2.

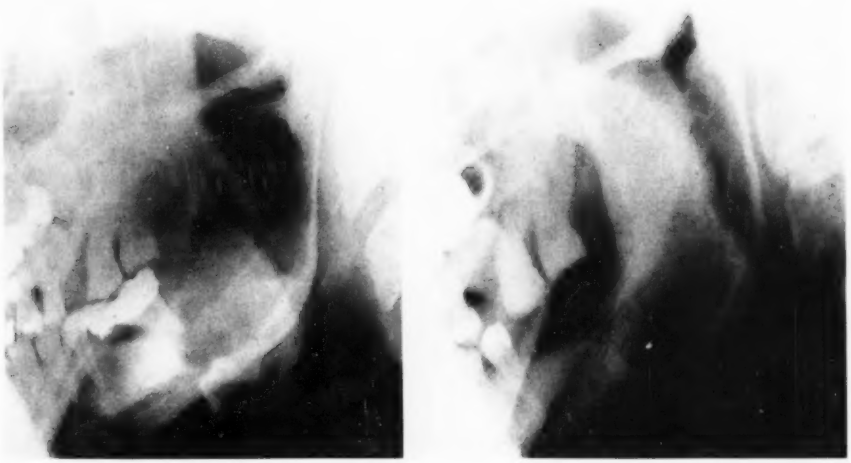


Fig. 1—Left: Radiolucent area involving almost the entire ramus of the left jaw. Right: Postoperative view showing complete regeneration of bone

teeth involved in the cyst. Root canal therapy is performed prior to apicoectomy.

CASE 1—A woman, aged 35, was referred on February 10, 1933, with swelling and pain in the left mandible at the angle. This swelling had begun 10 days previously and had increased rapidly in the last two days.

Clinical examination revealed a distinct swelling on the left side of the face above the angle of the jaw. There was slight tenderness to palpation. No redness or fluctuation was present extraorally. Intraoral examination revealed a soft, fluctuating mass about the lower left third molar, the only molar in position, at the mucobuccal fold.

Roentgenographic examination showed a large, well defined radiolucent region from the lower third molar region, involving almost the entire ramus of the jaw (Fig. 1, left).

The clinical diagnosis was acute exacerbation of a radicular cyst. Under general anesthesia an incision was made and drainage instituted. Three days later the swelling had practically subsided and the drain was removed.

On February 20, 1933, under local anesthesia, the cystic membrane was enucleated and the lower left third molar was removed. The contents of the inferior alveolar canal could be seen, but apparently the canal was not injured. The wound was sutured. No dressing was inserted. The tissue was sent for microscopic examination; the report was radicular cyst.

The postoperative course was uneventful and the patient was dismissed on

March 10, 1933. There was no paresthesia.

A postoperative roentgenogram taken on July 19, 1934, 18 months after the operation, showed complete bone regeneration (Fig. 1, right).

CASE 2—A woman, aged 30, was referred for diagnosis and treatment. Routine roentgenographic examination had revealed a large, radiolucent area extending from the region of the lower right central incisor to the lower right first molar.

Clinical examination revealed no visible deformity. The mucous membranes were normal and there were no subjective symptoms. All teeth on the lower right side responded to galvanic current. The lower right second bicuspid was missing.

Lateral roentgenograms revealed a rather well defined radiolucent area, extending from the midline to the lower second bicuspid region (Fig. 2, left).

The clinical diagnosis was radicular cyst or hemorrhagic or traumatic cyst.

On October 22, 1948, under local anesthesia, the mucoperiosteal flap was reflected from the midline to the lower right third molar region. The overlying cortical plate below the apexes of the teeth was removed, exposing most of the cystic membrane. The entire membrane, which was rather thick, was carefully enucleated. The inferior alveolar nerve, which could be seen, was injured only at the mental foramen. The apexes of the lower right first molar roots extended into this cavity, and this tooth was removed. None of the other teeth were involved. Penicillin powder and Oxycel were inserted and the

Fig. 2.—Left: Radiolucent area from midline to the second molar region. Right: Postoperative view showing almost complete regeneration of bone

wound completely closed by sutures. The patient was advised of the probability of paresthesia, and the need for periodic check up and pulp testing of remaining teeth.

Microscopic examination showed the winding margins of the cystic cavity were intact squamous epithelium. Often it was reduced to a shallow line of cells by internal residue. Collagen was gathered into coarse bundles in the outer wall. Signs of active inflammation were minimal. Signs of extravasation from vessels were more common. The condition was diagnosed as cyst.

On the third postoperative day there was considerable paresthesia present, very little swelling and no pain. The sutures were removed.

The lower right lateral incisor, cuspid and first bicuspid did not respond to galvanic current on November 20. On the lower right second molar there was a doubtful response.

By December 15 paresthesia had narrowed down to a small area about the size of a dime on the right side of the chin. The lower right cuspid and second bicuspid teeth responded to galvanic current. The lateral incisor and first bicuspid did not respond. A postoperative roentgenogram showed almost complete regeneration of bone (Fig. 2, right).

This case is reported because of the questionable clinical diagnosis and as evidence that extensive cysts can, at times, be successfully treated conservatively. The fact that the teeth responded to galvanic test would make one think of a traumatic or hemorrhagic cyst, even though there was no history of any trauma. The missing bicuspid tooth probably was the etiological factor, since the pathological report proved this to be a radicular cyst.

CASE 3—A boy, aged 15, complained of slight pain in the lower anterior region of the mandible. He gave a history of receiving a blow on the chin about two years previously.

The mandibular central incisors were slightly darker in shade than the adjacent anterior teeth. The right central incisor was sensitive to percussion. There was no evidence of any swelling. The lower right and left central incisors did not respond to galvanic current. The patient was referred to the root therapy department.

One week later the patient was referred back to the oral surgery clinic for apicoectomies, after having had the root canal therapy performed (Fig. 3, *A*).

Under local anesthesia the cystic membrane was enucleated and apicoectomies were performed on both lower central incisors. The lips of the wound were coaptated with sutures, and postoperative roentgenograms taken (Fig. 3, *B*).

The sutures were removed four days after the operation; healing was uneventful. Postoperative roentgenograms three months later showed evidence of some bone regeneration (Fig. 3, *C*).

Roentgenograms 12 months after the operation showed complete bone regeneration (Fig. 3, *D*).

■ *Dentigerous Cysts*

Dentigerous, or follicular, cysts are epithelial lined sacs found about the crowns of unerupted teeth. They derive their epithelium from the follicle of the developing tooth or teeth. They, too, can be unilocular or multilocular in character,

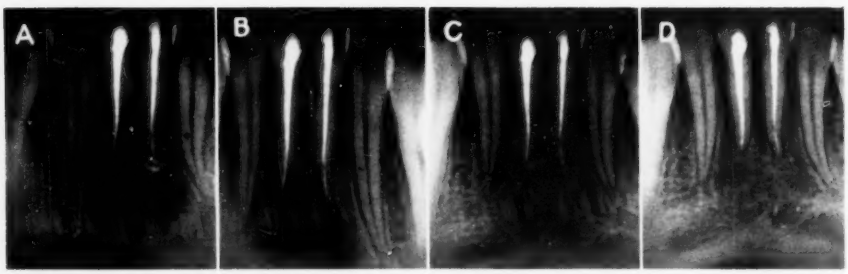


Fig. 3.—A: Well defined radiolucent area involving lower central incisors. Root canal therapy was completed before the operation. B: Cystic membrane was enucleated and apicoectomies were performed on central incisors. C: Some evidence of bone regeneration three months later. D: Roentgenogram taken 12 months after the operation showed complete bone regeneration

and can be found wherever there are unerupted permanent teeth or supernumerary teeth present. The roentgenographic picture will reveal a well defined, radiolucent area, with a white line about its periphery, and the presence of an unerupted tooth or teeth. Dentigerous cysts may be ameloblastomas.

The treatment is chiefly the removal of the unerupted tooth or teeth and enucleation of the cystic membrane. When these cysts are found in young individuals and involve the crown or crowns of unerupted developing permanent teeth, the cystic membrane can be enucleated carefully, and the developing teeth retained in position to permit their eruption.

CASE 4—On April 26, 1941, a girl, aged 10, was referred for diagnosis and treatment of swelling of the upper right jaw.

Clinical examination showed a distinct, rather hard swelling in the right infraorbital region. The mother had noticed the swelling for the first time three weeks previously, and believed it was getting larger. The patient did not complain of pain or discomfort. Intraoral examination revealed a bulge of the buccal plate of bone from the upper right lateral incisor to the right first molar region. The lateral incisor was in buccoversion.

Roentgenographic examination revealed a large, well defined radiolucent area extending from the upper right lateral incisor to the right first molar region, with the crown of an unerupted cuspid tooth extending into this area. The apexes of the upper right bicuspids were either incompletely formed or resorbed. Other roentgenograms revealed the unerupted cuspid in the right maxillary sinus (Fig. 4).

The clinical diagnosis was dentigerous cyst involving the right maxillary sinus.

The mother was advised that in view of the patient's age the cyst and unerupted tooth should be removed, but that the bicuspids involved be retained, even at the chance of a possible recurrence of the cyst. She was also advised that these teeth be checked periodically for vitality after

the operation and, if necessary, an attempt made for conservative treatment with root therapy.

On July 7, 1941, under general anesthesia, the mucoperiosteal flap was reflected buccally. The buccal plate of bone, which was very thin, was removed, exposing cystic membrane. The cyst was enucleated and the unerupted tooth was removed from the maxillary sinus. The lips of the wound were coaptated with five sutures. Tissue was sent for microscopic examination.

On July 12, the patient visited the office for removal of sutures, having been dismissed from the hospital on the second postoperative day. There had been slight swelling, no pain and no temperature.

Postoperative roentgenograms were taken on July 14. The upper right lateral incisor responded to galvanic current. On the upper right first and second bicuspids there was a questionable response.

The pathological diagnosis was dentigerous cyst, with no evidences of malignancy.

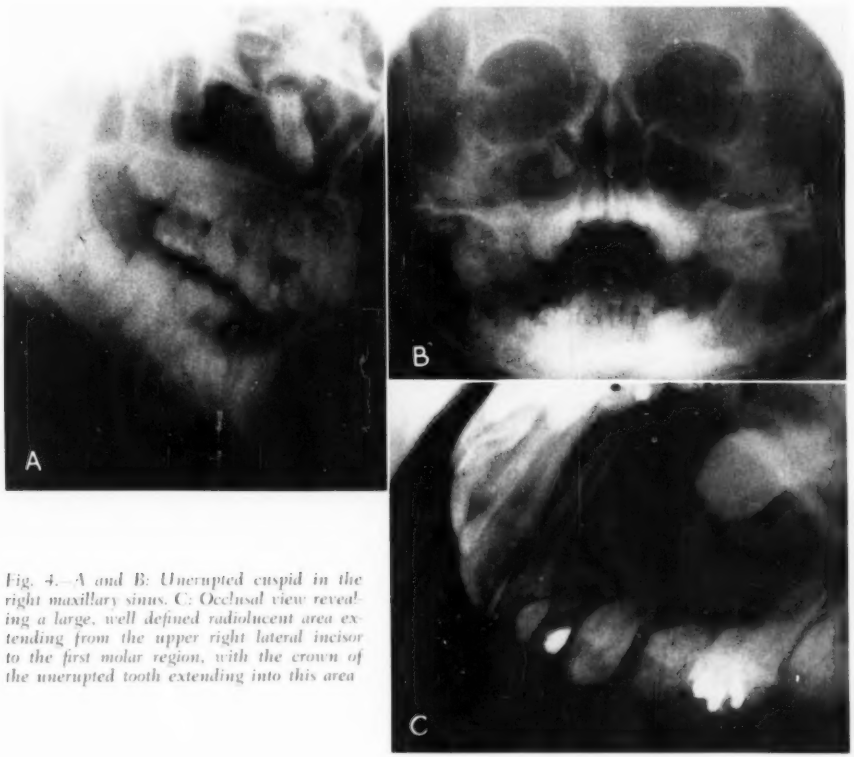


Fig. 4.—A and B: Unerupted cuspid in the right maxillary sinus. C: Occlusal view revealing a large, well defined radiolucent area extending from the upper right lateral incisor to the first molar region, with the crown of the unerupted tooth extending into this area

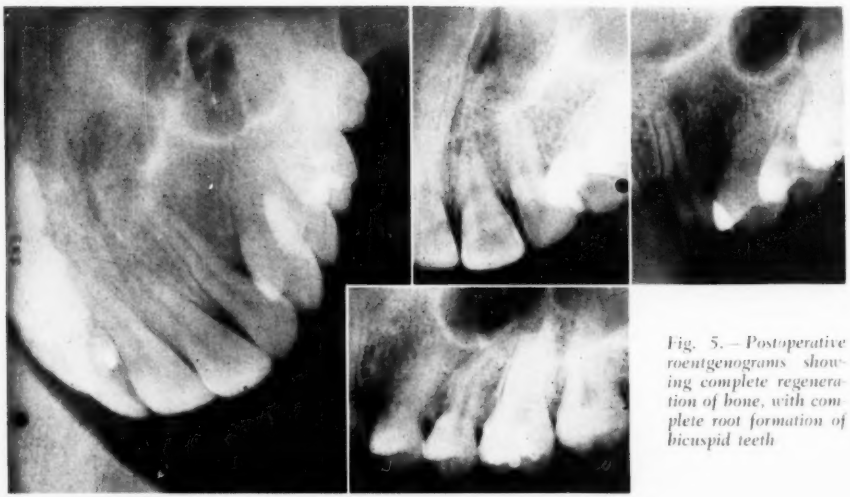


Fig. 5.—Postoperative roentgenograms showing complete regeneration of bone, with complete root formation of bicuspid teeth

In September check-up roentgenograms were taken. The upper right lateral incisor and first and second bicuspids responded at normal reading with galvanic test. The patient was dismissed.

The patient was seen, April 15, 1947, at which time occlusal and intraoral roentgenograms showed complete regeneration of bone, with complete root formation of the bicuspid teeth (Fig. 5). All upper teeth responded to galvanic current.

CASE 5—A male, aged 23, was referred for diagnosis and treatment. The patient gave a history of swelling and spontaneous drainage at the angle of the left mandible. When the swelling was present the left side of the jaw was numb.

Clinical examination showed no evidence of swelling or opening where spontaneous drainage had occurred.

Roentgenographic examination showed a multilocular radiolucent area extending upward from the lower left second molar, involving the entire ramus to the sigmoid notch. The lower left third molar was impacted (Fig. 6, *A*).

The clinical diagnosis was ameloblastoma or dentigerous cyst.

Removal of the impacted third molar and biopsy of the tumor were advised. The subsequent procedure was to depend on the microscopic report.

On August 17, 1948, the impacted third molar was removed and a portion of the cyst membrane was taken for microscopic examination.

The condition was diagnosed as locular cyst. Basal nests in the wall suggested ameloblastic changes. Intraoral enucleation of the mass and the removal of the lower left first and second molar teeth were advised. The patient was told of the possibility of recurrence.

On October 1, under endotracheal anesthesia, a mucoperiosteal flap was reflected from the lower left second bicuspid region to the anterior border of the ramus and upward. The lower left first and second molar teeth were removed; the overlying bone on the anterior border was removed, producing a window to give sufficient access to remove the growth. The inferior alveolar nerve was seen but was not damaged. The wound was sutured and packed. Healing was uneventful, and the patient was discharged from the hospital on the third postoperative day.

The wound was dressed and irrigated every two or three days until granulation tissue formed. Some paresthesia was present.

Microscopic examination revealed cystic adamantinoma, but no suggestion of malignant change.

On November 11, a lateral roentgenogram of the right mandible showed an impacted third molar and a radiolucent area involving the ramus (Fig. 6, *B*). The radiolucency simulated that of osteomalacia. Blood and urine chemistry were normal.

By January 14, 1949, the wound on the left side was healed and no paresthesia was noted.

On July 28, the impacted lower right

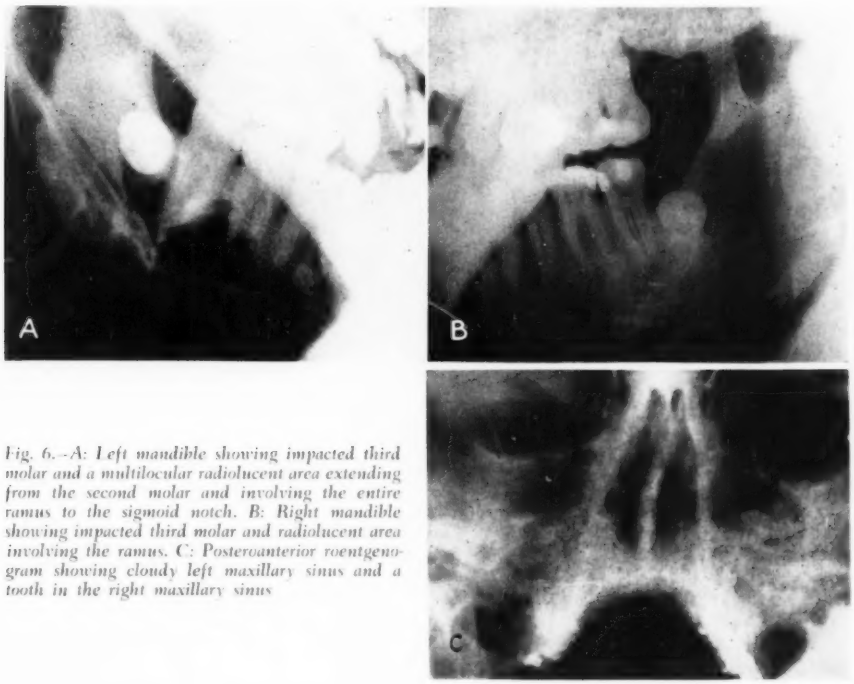


Fig. 6.—A: Left mandible showing impacted third molar and a multilocular radiolucent area extending from the second molar and involving the entire ramus to the sigmoid notch. B: Right mandible showing impacted third molar and radiolucent area involving the ramus. C: Posteroanterior roentgenogram showing cloudy left maxillary sinus and a tooth in the right maxillary sinus

third molar tooth was removed, and what appeared to be a degenerated cyst was enucleated. This mass involved almost the entire right ramus of the jaw. The wound was sutured without drainage.

The patient was seen at two or three day intervals. The postoperative course was uneventful and the patient was not aware of any paresthesia.

Microscopic examination revealed dentigerous cyst; no signs of ameloblastic elements.

Three months later the patient complained of discharge of pus from the upper left third molar region, and gave a history of having an impacted upper left third molar removed several years previously. Examination revealed a fistula in the mucobuccal fold distal to the upper left second molar which communicated with the maxillary sinus. The discharge was foul smelling. A posteroanterior roentgenogram showed a cloudy left maxillary sinus and the presence of a tooth in the right maxillary sinus (Fig. 6, C). The patient was advised to consult an otolaryngologist.

On December 28, a dentigerous cyst was removed from the right and left maxillary sinus.

CASE 6—In June 1949, a brother of the patient in Case 5, was referred for the removal of a possible cyst of the left mandible. The patient had a cyst, extending from cuspid to cuspid region, removed from the lower jaw about one month previously.

Roentgenographic examination of the left mandible showed a radiolucent area from the lower left second molar extending to and including the ramus, with a scalloping effect at its border (Fig. 7, left).

A lateral roentgenogram of the right mandible showed a circumscribed radiolucent area in the ramus of the jaw, simulating a cyst (Fig. 7, right). There was a radiolucent area in the anterior part of the mandible where a cyst had been removed.

The clinical diagnosis was ameloblastoma of the left mandible and cyst of the right mandible.

On July 8 the lower left second molar was removed, and a thick, fibrous multilocular membrane involving the entire left ramus was enucleated. The inferior alveolar nerve could be seen but was not injured. Penicillin powder and Oxycel was inserted, and the wound was sutured. The postoperative course was uneventful and there was no paresthesia.

A microscopic examination was performed and the condition was diagnosed as a cyst. There was no evidence of ameloblastoma.

On August 18, the lower right second molar was removed and the membrane enucleated from the right ramus. Penicillin powder and Oxycel were inserted and the wound sutured.

There was some discomfort following the operation, which was relieved with sedative dressings.

From the pathological report the diagnosis was cyst; potential ameloblastic nests in the wall.

The patient was dismissed September 14, 1949.

Four months later roentgenographic examination showed a radiolucent area from the upper left central incisor to the upper left first molar region. The lateral

incisor and cuspid roots were divergent, with the area extending downward toward the ridge (Fig. 8). All teeth on the upper left side responded to galvanic pulp test.

A clinical diagnosis of globulomaxillary cyst was made.

On January 30, 1950, a mucoperiosteal flap was reflected. The overlying thin buccal plate of bone, between the lateral incisor and cuspid teeth and over the apexes of the anterior teeth, was removed, exposing a cystic membrane. The cyst contained thick pus with no odor. The membrane was enucleated and the upper left lateral incisor was removed, because the root of this tooth was completely exposed. There was no communication with either the floor of the nose or maxillary sinus. The wound was sutured without drainage.

Except for swelling the postoperative course was uneventful.

The upper left central incisor did not respond to galvanic current; the upper left cuspid and bicuspids did respond.

The biopsy confirmed the diagnosis of globulomaxillary cyst. The location and the presence of vital teeth were aids in calling this nondescript cyst globulomaxillary.

Three months later the wound was healed and further vitality tests were made periodically.

Eight months after the operation the upper left central incisor, cuspid and bicuspids responded to vitality tests. Roentgenograms showed complete bone regeneration in the lower jaw and almost complete regeneration in the upper jaw.

Comment—Cases 5 and 6 are re-

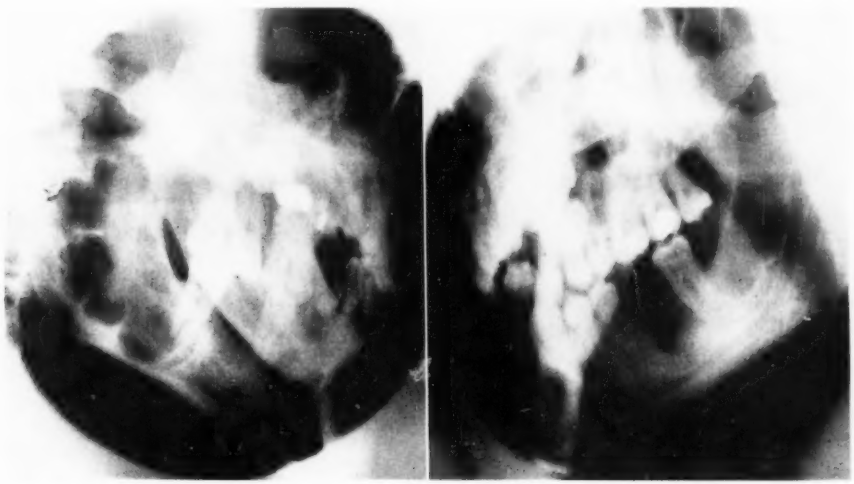


Fig. 7.—Left: Radiolucent area involving the ramus of the left mandible. Right: Radiolucent area in the ramus of the right mandible. Radiolucent area in the anterior part of the mandible is where a cyst had been removed

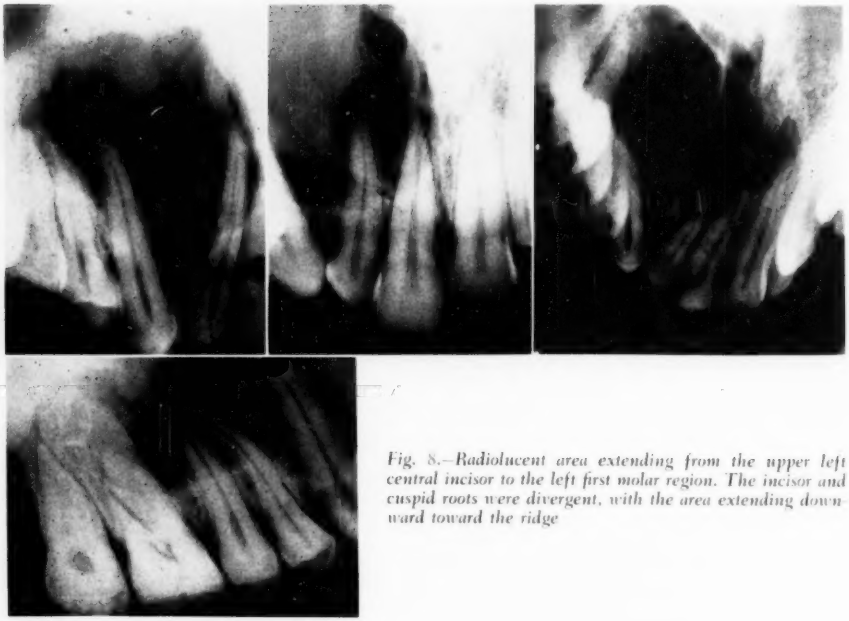


Fig. 8.—Radiolucent area extending from the upper left central incisor to the left first molar region. The incisor and cuspid roots were divergent, with the area extending downward toward the ridge

ported because of a familial history of multiple cysts. In Case 5 (Fig. 6, *A*), the diagnosis after biopsy was "dentigerous cyst, suggesting possible ameloblastic changes." The microscopic report following the removal of the growth was "cystic ameloblastoma." In Case 6 (Fig. 7, left), the roentgenogram suggested ameloblastoma, yet the microscopic report was "dentigerous cyst," and no evidence of ameloblastoma was found. In contrast to this, in Case 6 (Fig. 7, right), the roentgenogram resembled a cyst. However, the microscopic report was "cyst with questionable ameloblastic changes."

CASE 7—A woman, aged 31, complained of a slight swelling of the lower left jaw which had been present for six months.

There was a distinct, hard, painless bulge of the buccal plate in the lower left bicuspid region, which was visible extraorally. The lower border of the mandible was uneven, extending downward at the bicuspid region.

A lateral roentgenogram of the left mandible revealed three impacted teeth, with a circumscribed radiolucent area extending from the lower left first bicuspid to the first molar region (Fig. 9, left).

Under local anesthesia the dentigerous cyst was enucleated on May 14, 1949, and three impacted teeth were removed. The apex of one of these teeth protruded through the buccal border of the mandi-

ble, causing the palpable deformity below the border of the mandible. The patient had paresthesia following the operation. Otherwise the postoperative course was uneventful.

After biopsy a diagnosis of dentigerous cyst was made.

Eight months later a roentgenogram of the left mandible showed almost complete regeneration of bone (Fig. 9, right). Paresthesia was still present, but was confined to the cuspid region.

CASE 8—A boy, aged 10, complained of swelling of the lower left jaw, which had been present for three months.

There was a painless tumor of the buccal plate of the lower left jaw from the lateral incisor to the first molar region. There was an eggshell-like consistency to the area when palpated.

Roentgenographic examination showed a radiolucent area about the developing permanent lateral incisor, cuspid and first bicuspid teeth (Fig. 10, left).

On January 22, 1948, under local anesthesia, the dentigerous cyst was carefully separated from the necks of the developing teeth and was enucleated without disturbing the tooth buds. The wound was packed with gauze dressing.

The dressing was removed three days later. The wound was irrigated periodically and the patient dismissed three weeks after the operation.

After microscopic examination the condition was diagnosed as dentigerous cyst.

Two years after the operation a roentgenogram of the left mandible showed the permanent lateral incisor, cuspid and first bicuspid completely erupted with normal root development (Fig. 10, right).

This case demonstrates the value of the conservative approach in removing a dentigerous cyst in a young patient.

■ *Nonodontogenic Cysts*

Nonodontogenic cysts are hemorrhagic or traumatic cysts, median palatine

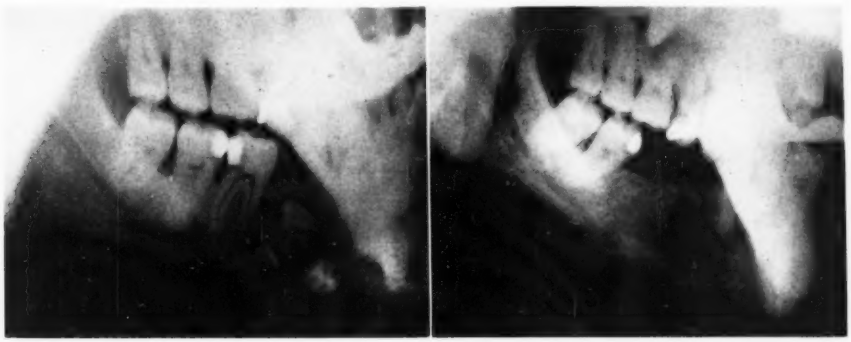


Fig. 9.—Left: Three impacted teeth in the left mandible, with a circumscribed radiolucent area extending from the first bicuspid to the first molar region. Right: Almost complete regeneration of bone eight months postoperatively

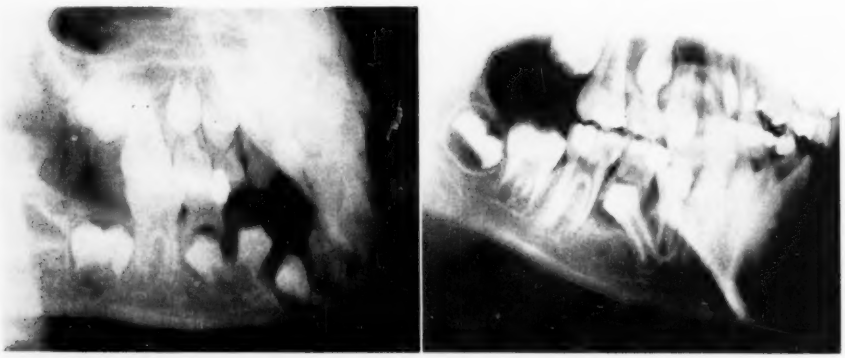


Fig. 10.—Left: Radiolucent area about the developing permanent lateral incisor, cuspid and first bicuspid. Right: Two years after operation lateral incisor, cuspid and first bicuspid were completely erupted, with normal root development

cysts and globulomaxillary cysts.

Hemorrhagic, traumatic or extravasation cysts are generally found in young people, and are caused by trauma. The injury produces hemorrhage in the bone, resulting in dissolution of cancellous bone. These cysts have no epithelial lining but may have a thin, connective tissue lining. At times this lining attached to the outer plate of bone is so thin that it can only be demonstrated microscopically. As a rule there are no symptoms present; they are discovered by roentgenographic examination.

Roentgenograms reveal a rather well defined radiolucent area which may be irregular in outline. It has no white line about its periphery. It may expand the cortex of the bone, but seldom perforates it. Wherever teeth are apparently involved in the cystic cavity they will retain their vitality, and the periodontal lamella will be intact.

The treatment consists of opening a window below the apexes of the teeth and aspirating the contents of the cyst. The contents may be dried blood clots, serous fluid or even, as is often seen, an empty space. The teeth should not be disturbed but should be tested periodically for vitality. The surgical interference and aspiration of contents will stimulate a new blood clot, and regeneration of bone will follow.

CASE 9—On November 2, 1946, a boy, aged 14, was referred by his dentist for diagnosis and treatment of a large radiolucent area in the lower left lateral incisor and cuspid region.

He was a well developed boy who had no pain or swelling. The teeth and mucous membrane were normal. All lower anterior teeth responded to galvanic test. The patient remembered receiving a blow on his chin one year previously. The chin had been tender for a few days.

An intraoral roentgenogram revealed a rather regular but not too sharply defined radiolucent area in the lower an-

terior region (Fig. 11, *A*). The apexes of the central and lateral incisors projected into this radiolucent area. However, the periodontal lamella did not appear to be broken.

A clinical diagnosis of hemorrhagic or traumatic cyst was made.

On November 9, under local anesthesia, a mucoperiosteal flap was reflected and a window opened through the cortical plate of bone, well beneath the apexes of the lower left central and lateral incisors. The cavity contained some blood which was aspirated thoroughly, but there was no membrane. The lips of the wound were coaptated and sutured. Overlying bone which had been removed was sent for microscopic examination.

The healing was uneventful. Ten days following the operation there was questionable response to galvanic current on the lower left central and lateral incisors and the cuspid.

Five weeks later the lower left central incisors and cuspid gave a positive response to the galvanic test but there was no apparent response on the lower left lateral incisor.

From the pathological report the condition was diagnosed as hemorrhagic cyst (bone condensations on margins of cavity).

Postoperative roentgenograms showed regeneration of bone (Fig. 11, *B*). On April 16, 1947, the defect was completely filled in (Fig. 11, *C*). The teeth responded to galvanic current.

CASE 10—A male, aged 20, came to the clinic for routine dental treatment.

Routine roentgenographic examination revealed a large radiolucent area in the lower right molar region, extending from the first molar to about 0.5 cm. distal to the third molar. It involved the anterior portion of the ramus and extended downward to the lower border of the mandible (Fig. 12). The periodontal lamella ap-

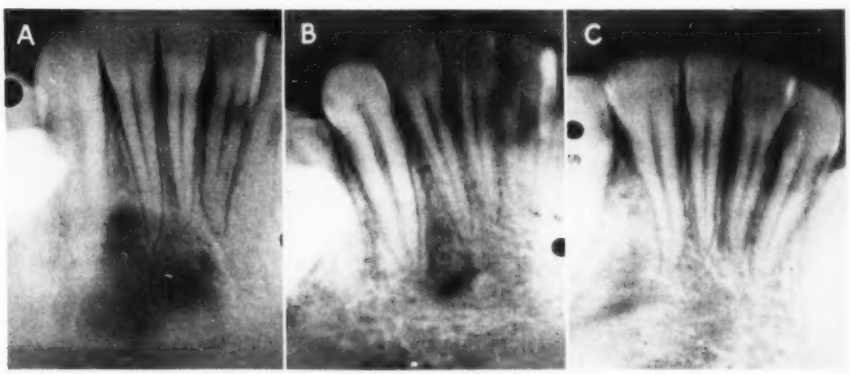


Fig. 11.—A: Radiolucent area in the lower anterior region, involving the apexes of the central and lateral incisors. B: Showing some regeneration of bone. C: Four months after operation the defect was completely filled in

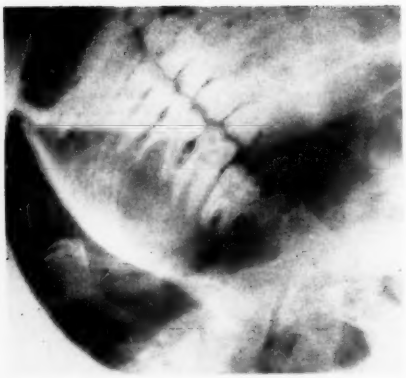


Fig. 12.—Radiolucent area involving the anterior portion of the right ramus and extending downward to the lower border of the mandible

peared intact about the roots of all three molar teeth.

There were no symptoms present, and the lower right posterior teeth responded to galvanic current. A clinical diagnosis of hemorrhagic cyst was made at this time.

On November 15, 1937, under local anesthesia, a mucoperiosteal flap was raised from the distal aspect of first bicuspid to the anterior border of the ramus. The outer plate of bone was intact, and a large window was opened with chisel and mallet well below the apexes of the molar teeth. There was no visible membrane present, but some serous fluid was aspirated exposing a hollow cavity in the mandible. The apexes of the lower right first, second and third molar teeth were visible but were not disturbed. The wound was sutured.

The pathological report gave the diagnosis of hemorrhagic cyst.

Healing was uneventful. Unfortunately after the operation the patient did not return for further examination.

■ *Median Palatine Cysts*

Thoma makes a distinction between median palatine cysts, cysts of the papilla palatina and incisive canal or nasopalatine cysts. The median palatine cyst is formed from entrapped epithelium at the junction of the embryonic processes which make up the hard palate. The incisive canal, or nasopalatine tissue is formed by epithelial remnants in the incisive canal or foramen. Because of the difficulty in differentiating, clinically, roentgenographically or microscopically between a true median palatine cyst and an incisive canal or nasopalatine cyst, I have classified all of these in one group as median palatine cyst.

These cysts are not of dental origin and must not be confused with dental root cysts in that region. When they are small they cannot be differentiated from the incisive canal or a normal enlarged incisive canal and, unless clinical symptoms are present, there is no need for surgical interference. As they develop in size they appear spherical and well defined roentgenographically. They can attain considerable size. The roentgenograms of a cyst of the papilla palatina reveal no abnormality.

Clinically there may be bulging of the anterior part of the palate. Pain may or may not be present. In edentulous areas both labial and palatal plates of bone may be distended or destroyed. If anterior teeth are not present and there is labial distention of bone, the approach is from the labial side rather than through the palate. If teeth are present the treatment

is enucleation of the cyst by a palatal approach, avoiding injury to the teeth.

CASE 11—A male, aged 55, complained of swelling of the upper jaw which had been increasing in size for five months.

There was a well defined swelling labially and palatally in the upper anterior region (Fig. 13, *A* and *B*). Upon palpation buccally and palatally definite fluctuation was felt. There was no pain.

The roentgenogram showed a well defined radiolucent area in the upper central region (Fig. 13, *C*).

A clinical diagnosis of radicular cyst (residual) was made.

Under local anesthesia, the upper lateral incisors were removed and the cyst was enucleated. Healing was uneventful.

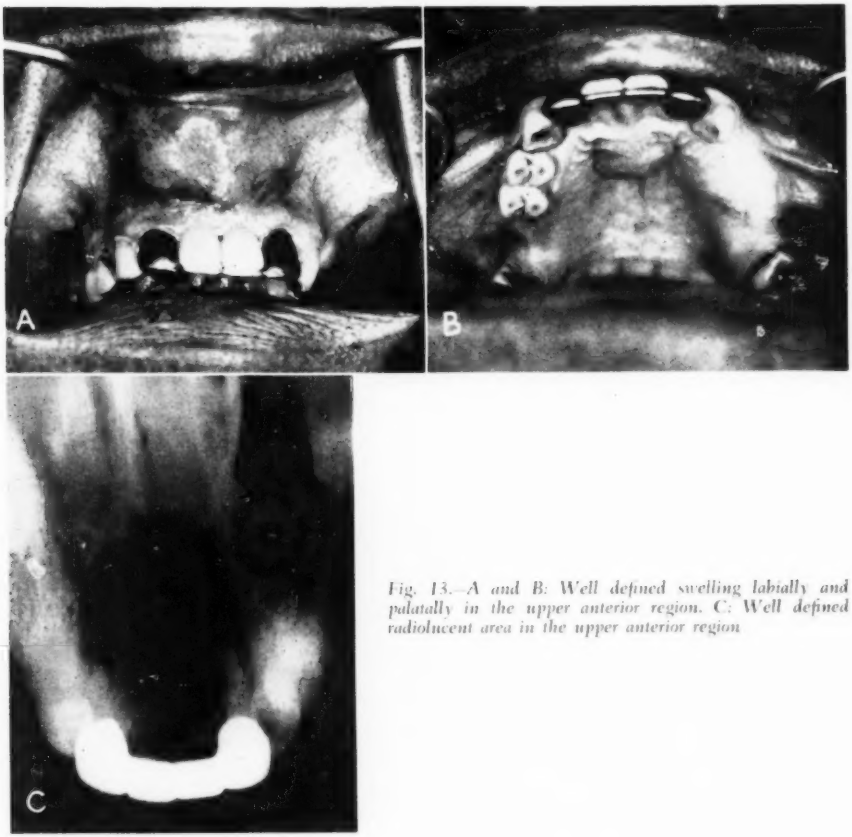


Fig. 13.—A and B: Well defined swelling labially and palatally in the upper anterior region. C: Well defined radiolucent area in the upper anterior region

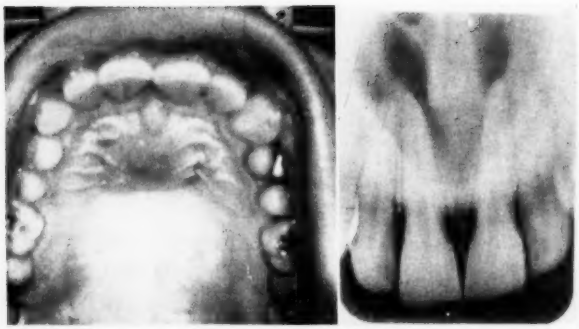


Fig. 14.—Left: Circumscribed swelling in the region of the anterior palatine papilla. Right: Radiolucent area, well defined and spherical in outline, in the upper anterior region

The pathological report gave the diagnosis of median palatine cyst.

CASE 12—A male, aged 27, complained of swelling and some pain in the anterior portion of the palate. It had been present for one month.

There was a circumscribed swelling in the region of the anterior palatine papilla (Fig. 14, left). The swelling was soft and fluctuant. The upper incisor teeth responded to galvanic current.

Intraoral roentgenograms showed a circumscribed radiolucent area, well defined and spherical in outline, in the upper anterior region. This is shown in Figure 14, right.

A clinical diagnosis of median palatine cyst was made.

On June 18, 1941, under local anesthesia, a mucoperiosteal flap was reflected palatally to include the gingival margins from cuspid to cuspid, exposing a thin, bluish membrane. The cystic sac was completely enucleated with a blunt periosteal elevator and the soft tissue flap was replaced. Two sutures were inserted through the palatal flap and tied to the necks of the lateral teeth, to insure proper retention of the flap.

The postoperative course was uneventful. Ten days later the upper anterior teeth responded to galvanic current.

From the microscopic examination, the condition was diagnosed as nasopalatine cyst.

CASE 13—A male, aged 40, was referred by his dentist. He gave a history of swelling of the palate which had been incised for drainage by the dentist, who diagnosed the condition as acute alveolar abscess.

Clinical examination revealed no evidence of palatal swelling but there was a defect in the palatal mucous membrane posterior to the anterior papilla. A probe inserted through this opening entered a distance of about 5 mm. before contacting bone. The upper anterior teeth responded to galvanic current.

Roentgenographic examination showed a well defined, spherical radiolucent area at the anterior portion of the palate (Fig. 15). The periodontal lamella around the anterior teeth was intact.

A clinical diagnosis of median palatine cyst was made.

On April 12, 1946, the cystic membrane was completely enucleated through a palatal approach, under local anesthesia. The opening where the previous incision had been made in the midline was closed by sutures. The healing was uneventful and the sutures were removed one week after the operation.

The area in the midline broke through one month later and there was a depression which collected some food debris. The wound was irrigated. The patient was observed for another month, and the wound was irrigated.

After another month it was apparent that this defect would not close (Fig. 16, *A*). It was decided that a plastic closure was indicated.

On June 20, liberating incisions were made on both sides of the palate from between the lateral and cuspid extending to the first molar region. The margins of the cleft were freshened by excision of the overlying epithelium. The mucoperiosteum was elevated from the lateral incisions inward. A Vitallium ribbon was inserted through one lateral incision, beneath the mucoperiosteum, emerging from the other lateral incision. The margins of the cleft were sutured and the Vitallium ribbon was tied down to relieve tension (Fig. 16, *B*).

After one week the Vitallium ribbon was removed. The sutures on the cleft margin appeared to be holding. The sutures were removed from the palate on the tenth postoperative day. Two months after closure of the defect the wound was completely healed and no defect was present (Fig. 16, *C*).

■ *Summary*

The diagnosis and treatment of odontogenic cysts are discussed in this article.

Representative cases for these various types of cysts are reported. Both radical and conservative treatment are described.

Case 2 demonstrates a problem in diagnosis and etiology.

Cases 4 and 8 are reported to show the need for careful preoperative planning toward a conservative approach.

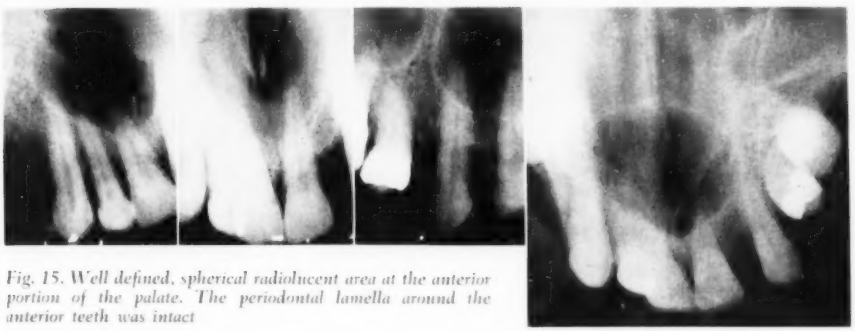
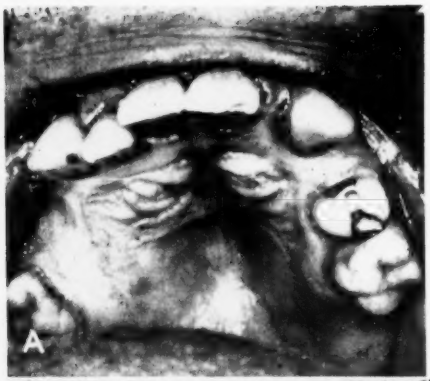
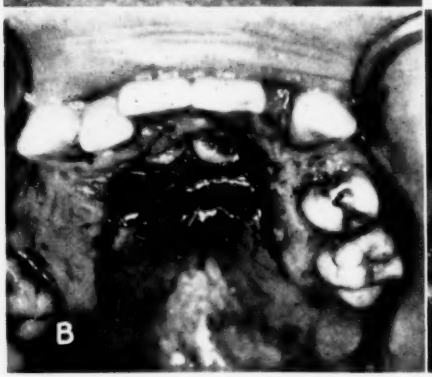


Fig. 15. Well defined, spherical radiolucent area at the anterior portion of the palate. The periodontal lamella around the anterior teeth was intact





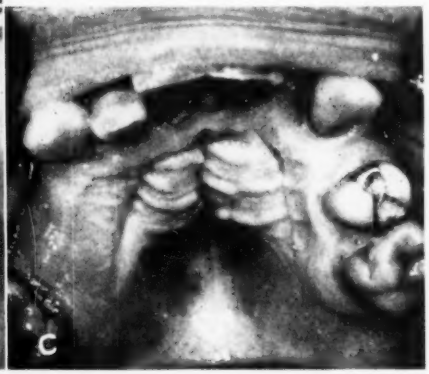


Fig. 16.—A: Two months after operation the defect had failed to close. B: Vitallium ribbon was inserted through a lateral incision, beneath the mucoperiosteum, emerging from the opposite lateral incision. The margins of the cleft were sutured and the Vitallium ribbon tied down to relieve tension. C: Two months after closure of the defect the wound was completely healed.

Cases 5 and 6 demonstrate multiple cysts in two members of one family. Figure 6, *A*, Case 5, shows a dentigerous cyst with ameloblastic changes. Figure 7, Case 6, shows atypical roentgenograms and this disparity indicates that roentgenograms cannot be the basis for a final diagnosis. The diagnosis of any lesion must be substantiated by a microscopic examination.

■ MERIT

There is endless merit in a man's knowing when to have done.—*Carlyle.*

The status of general anesthesia in dental practice

■ *Sterling V. Mead, D.D.S., Washington, D.C.*

There is an urgent demand that the dental profession become aware of what is happening in the field of general anesthesia, so that adequate courses of instruction in the dental schools can be provided. Provision should be made for research in all phases of general anesthesia together with the extension of general anesthetic services in dentistry. This cannot be accomplished by any one individual or in a short period of time. There should be a standing committee of the American Society of Oral Surgeons constantly at work upon these problems. There is a tendency to discount the suggestions of any one individual, as any suggestion brings forth the feeling of personal opinion only. This is why it is so important to present a united front from a group.

In my Presidential address[1] to the American Dental Association at Boston in August, 1947, particular attention was called to the status of general anesthesia in dentistry, and at that time the Association was advised that immediate steps should be taken to correct the situation.

Many disturbing factors focus attention upon this problem. For example, the prohibition against the use of general anesthesia by dentists in most European and South American countries, periodic attempts by nondental groups in this country to pass legislation for the purpose of exclusively controlling the administration of general anesthetic agents and erroneous statements in official publications and other authoritative sources regarding general anesthesia in dental practice.

In San Francisco, in 1949, this matter was brought to the attention of the members of the American Society of Oral Surgeons and a special committee on anesthesia was appointed and began work immediately. This committee had a meeting with a representative of the Council on Dental Therapeutics of the American Dental Association and discussed certain statements about general anesthesia that have appeared in its publications. The need for revision of several passages in *Accepted Dental Remedies* was demonstrated. Among these were the references to the use of carbon dioxide for resuscitation in an emergency, failure to include thiopental sodium as an anesthetic agent, the limitation of thiopental sodium to short anesthesias only, the inclusion of special cautionary statements in the description of thiopental sodium in the absence of similarly detailed cautionary statements with regard to other general anesthetics, the modification and clarification of such words as "expert," "dangerous" and "landmarks" with respect to certain anesthetics and their use, the rigid

Presented at the thirty-second annual meeting of the American Society of Oral Surgeons, Atlantic City, October 25-28, 1950.

1. Mead, S. V., Presidential Address, eighty-eighth annual meeting of the American Dental Association, Boston, August 4-8, 1947.

percentage doses of oxygen in conjunction with nitrous oxide instead of an "adequate supply of oxygen," selection of a better term than "office practice" with reference to adequate facilities for the use of general anesthetics in routine practice.

Although heavily burdened by handicaps, the art of general anesthesia in dentistry has advanced. Much of the research and continued clinical use of general anesthesia by dentists has been accomplished by important dental councils and authorities.[2,3] All through the years, certain men in dentistry have made use of general anesthesia in their daily work and have been instrumental in developing many of the refinements in apparatus and technic that are used by both medical and dental practitioners.

Some authorities, in their sincere effort to teach caution about the use of general anesthetics, overstress many things that tend to frighten dentists and discourage the use of general anesthesia in dental offices. The dentist should have adequate training, experience and proper qualifications, and should know the advantages, disadvantages and complications of all anesthetic agents and methods, for both local and general anesthesia.

There is no doubt that the wrong impression has been created by a few individuals who believe that nitrous oxide-oxygen is the sole anesthetic agent for every case, or those who believe that local anesthesia is the sole answer.

■ *Balanced Anesthesia*

John Lundy[4] defined "balanced anesthesia" as: "The use of a combination of anesthetic agents and methods so balanced that part of the burden of relief of pain is borne by preliminary medication, part by local anesthesia and part by one or more general anesthetic agents."

It is claimed that the major objective of balanced anesthesia is to avoid the hazard of overdosage which is not infrequent when only one anesthetic agent is employed. The term as now used denotes the use of a combination of anesthetic agents best suited to the plan regardless of type. Balanced anesthesia, therefore, may be attained by a combination of local and general anesthesia or with two or more general anesthetic agents.

It is no longer good practice to limit one's anesthetic practice to one or even two anesthetic agents. There is no ideal anesthetic agent. Each patient should receive individual study, and the anesthetic agents that best suit his individual needs should be used.

Dentistry is using local anesthesia, nitrous oxide and oxygen, thiopental sodium, divinyl ether (Vinethene), ethyl ether, ethyl chloride and Avertin. These are listed in accordance with the average usage by dentists of each respective agent. Some few dentists use cyclopropane, ethylene and chloroform. Trichlorethylene is used extensively in England.

■ *Nitrous Oxide-Oxygen*

Nitrous oxide-oxygen is a valuable anesthetic agent for dental purposes. In some cases, it is the anesthetic of choice; in others, it is absolutely contraindicated;

2. Gordon, S. M., Intravenous Medication. *J.A.D.A.* **18**: 1787 (Sept.) 1931.

3. Council on Dental Therapeutics, *Accepted Dental Remedies*, ed. 14. Chicago: American Dental Association, 1949.

4. Lundy, J. S., Adams, R. C., and Mousel, L. H., Intravenous Anesthesia in Dentistry and Oral Surgery. *Anesth. & Analg.* **18**:358 (Nov.-Dec.) 1939.

in many cases it can best be used in the field of balanced anesthesia with other drugs and agents.

■ *Thiopental Sodium*

Those who are not using thiopental sodium as a basal anesthetic with nitrous oxide-oxygen are not availing themselves of the advances in general anesthesia and are making many anesthetics difficult and even dangerous that could be more easily controlled.

Thiopental sodium is being used widely by the dental profession at the present time, and it is being used, not only by oral surgeons, but in general practice for filling of teeth, and as a basal anesthetic agent in combination with nitrous oxide and oxygen. Thiopental sodium has become an important adjunct to anesthesia for dental and oral surgical operations. It has made possible a more ideal method of handling the resistant type of patient, and has also added other refinements for the safety of the patient.

Thiopental sodium may be used for the entire anesthetic, using it continuously, and injecting more of the agent into the vein as it is necessary, but it is considered a safer procedure to use it as a basal anesthetic and supplement it with nitrous oxide and oxygen as the case demands. Those who fail to appreciate the great advantages of this agent and fail to make use of it where indicated are not giving their patients the benefit of definite improvements in anesthesia.

Adverse reports and warnings from authoritative sources make the use of an agent extremely hazardous for any operator, but in spite of these handicaps, many dentists continued the use of barbiturates, especially hexobarbital and later thiopental sodium intravenously in selected cases. Hexobarbital was used occasionally as early as 1937 and gradually was displaced by thiopental sodium. It was, however, the continued efforts of a group of specialists in oral surgery, Bullard,[5] Hubbell,[6] Olson[7] and Brockett,[8] following the work and technic of Lundy, who more or less routinely continued its use, that has been responsible for the now more common use of this method in dental practice.

■ *Local Anesthesia*

Dentistry gradually developed a system of local anesthesia that is used today by a great majority in the dental profession to the exclusion of all other methods. In fact, until World War II, it was difficult for the dentist in the armed services to make use of general anesthesia, except occasionally in hospitals and then only after much difficulty in obtaining permission.

Local anesthesia is the most widely used anesthetic for dental purposes, and for many dental operations is the anesthetic of choice; for others it can be used in combination with other drugs and other anesthetic agents.

Local anesthesia is used by more dentists with minimal equipment and is taught more thoroughly in the dental schools. Many dentists become familiar

5. Bullard, O. K., Intravenous Anesthesia in Office Practice for Operations in Exodontia and Oral Surgery. *Anesth. & Analg.* 19:26 (Jan.-Feb.) 1940.

6. Hubbell, A. O., Intravenous Anesthesia for Surgery With Sodium Ethyl (1-Methylbutyl) Thiobarbituric Acid. *J.A.D.A.* 27:1186 (Aug.) 1940.

7. Olson, Berto A., The Administration of Pentothal Sodium in Specialized Office Practice in Oral Surgery. *J. Oral Surg.* 1:197 (July) 1943.

8. Bullard, O. K., and Brockett, S. I., Combined Pentothal Sodium-Nitrous Oxide-Oxygen Anesthesia in Oral Surgery. *J. Oral Surg.* 3:138 (April) 1945.

only with local anesthesia because they are not properly taught the use of general anesthesia.

■ *Dangers*

Safety of anesthetic agents is a controversial subject. Safety should cover not only immediate but subsequent reactions. Every anesthetic agent is a lethal drug and must be employed with great care by those who have had ample training.

Statistics are often controversial. Numerous interrelated factors make responsibility difficult insofar as anesthetic agents are concerned. Deaths may occur from many causes incidental to anesthesia, including shock. Immediate death is but one factor to be considered in the danger of anesthetic agents. Great danger may follow local anesthesia in the form of cellulitis and other late postoperative sequelae as well as the immediate effect due to the toxicity of local anesthetics.

■ *Administration of General Anesthesia in Dentistry*

All physicians and dentists are permitted to give the various types of general anesthesia; however, the degree of Doctor of Medicine or Doctor of Dentistry does not in reality qualify one to give general anesthetics. Qualification is obtained only by special courses (usually outside the medical and dental schools) and practical training in all of the phases of anesthesiology.

In a survey of the work of 207 oral surgeons, Seldin[9] found that they had administered general anesthetics 2,420,148 times and only about 5 per cent of these men used local anesthesia exclusively.

The American Society of Anesthesiologists accepts dentists as associate members, but the American Board of Anesthesiology is entirely for physicians, and dentists are not eligible.

Members of the American Board of Anesthesiology will cast a formidable influence upon such vital questions as:

1. Choice of anesthetic.
2. Route of administration.
3. Training of personnel.
4. Preanesthetic and postanesthetic medication.

There can be no denial of the fact that higher learning of any type and the requirements of the American Board of Anesthesiology for its members are meritorious and desirable. There will be some anesthesiologists more energetic and outstanding than others, and fully trained anesthesiologists, experienced in anesthetic methods for dental purposes, will be comparatively few in number.

The economic question is of great importance and must not be overlooked. Already we are being pushed toward socialization, because of the cost of medical care. It is not a question in this age of creating superior service for a few, but a question of extending good services to more people.

The outstanding anesthesiologist now demands more for his service than small practices or some individuals can afford. Medical and dental schools cannot obtain the services of these specialists in many instances because of monetary considerations. The best teaching, therefore, at

*Dentists not eligible since November, 1950.

9. Seldin, Harry M., *Practical Anesthesia for Dental and Oral Surgery; Local and General*, ed. 3. Philadelphia: Lea & Febiger, 1947.

present is outside the medical and dental schools. As more of these specialists are available, possibly this picture may change.

The average patient does not feel that the fee for removal of teeth should be as great as for general surgery. It would, therefore, be impossible to obtain in all dental cases the fee necessary to support a Board member anesthesiologist. Indications are that in the future, this will be even more difficult.

The suggestion might be made that an anesthesiologist be called for dental cases or that the case be taken to the hospital. This is possible in a relatively small number of cases. The demand and necessity for general anesthesia is not of occasional occurrence, but of daily occurrence. The hospitals are overcrowded, costs are high, time is required of both the patient and the dentists and it is more difficult for the dentist to work out of his own environment. It is often difficult and usually impracticable to get an anesthesiologist to come in regularly every day or in selected cases.

Whenever responsibility can be divided, it is advisable, and the service of the best anesthesiologist available should be utilized when practical and possible.

When one observes the many angles of this problem, he can come to no other conclusion than that better and more adequate anesthetic training should be provided the dentist and dental student. Every effort should be made by individuals, groups, societies and dental schools to help solve this problem.

Nurse anesthetists administer a large percentage of the general anesthetics given in the United States. In Arizona, the legality of a nurse anesthetist giving an anesthetic in a dental office was questioned, and a test case brought a state Supreme Court decision that a dentist was, in fact, a physician under the meaning of the law and had every right to give, or have given by a nurse in his office, any anesthetic agent.

■ *Teaching of Anesthesia*

The American Association of Dental Schools[10] in "A Course of Study in Dentistry" stated: "An elaborate course in anesthesia might be suggested but the requirements of dental practice do not demand it. Since the dentist is principally concerned with local, rather than general anesthesia, the course should emphasize local anesthesia, and it need include only a brief discussion and experience with general anesthesia."

Anesthesia is a step-child of both medicine and dentistry. While the medical school now gives better training in general anesthesia than the dental school, a physician, a dentist, or a nurse, does not learn anesthesia in a school, but in the clinical field.

What constitutes an adequate training and where and by whom may it be obtained? Surely, not in medical and dental schools. A recent attempt to discontinue the "training of persons other than doctors of medicine in the science and art of anesthesia" failed to accomplish its purpose. The main reason was because of increasing demand for general anesthetic services, the economic problem involved

10. Curriculum Survey Committee, *A Course of Study in Dentistry*, American Association of Dental Schools, 1935.

and the great shortage of physician personnel for this purpose.

The dental schools must be staffed with men, not only trained in the teaching of technic but also the basic sciences of anesthesia; physiology of respiration; chemistry and pharmacologic action of the various anesthetic agents; the stages, signs and symptoms of anesthesia and resuscitation. The schools must also be staffed by dentists trained and qualified in the administration of general anesthesia and analgesia for dental and oral surgery. Postgraduate courses must also be organized, developed and expanded to their maximum capacity.

The practicing oral surgeon and recent dental school graduates, who contemplate the practice of oral surgery, owe it to themselves as well as to the profession to take full advantage of these postgraduate facilities in order to qualify for the administration of anesthesia. Steps must also be taken to provide additional facilities for such training in connection with the many hospitals which include among their services dental and oral surgery clinics. For this purpose, as well as for better health service for the public, the establishment of additional facilities should be encouraged.

■ *Suggestions for Teaching of General Anesthesia*

1. The undergraduate should receive a series of lectures in anesthesia in order to obtain a sound theoretical knowledge.

2. In his senior year he should be assigned to the general anesthesia department of the oral surgery clinic for a period of two weeks where he should administer from 25 to 35 anesthetics under the supervision of a dentist who has himself mastered the art of anesthesia.

3. In pharmacology, the student can learn the pharmacology of: (*a*) anesthetic agents and of drugs employed for premedication; (*b*) drugs employed in emergency for anesthetic overdose; (*c*) the effect of the various drugs upon the human body.

4. In physiology, there are many phases that bear relation to anesthesia: (*a*) pain stimuli; (*b*) the cardiovascular system; (*c*) the respiratory system, and so forth.

5. In anatomy, special consideration should be given to: (*a*) the path of inhalation anesthesia in the nose, throat, larynx, trachea and lungs; (*b*) intubation; (*c*) tracheotomy on the cadaver.

6. All of these courses should be coordinated and organized to give the student a knowledge and appreciation of the art of anesthesia.

7. Those who desire more extensive training in anesthesia should take postgraduate courses or internships in recognized hospitals.

■ *Research*

A dental school will advance only when its teachers continue to study, investigate and research. Funds for research in dentistry have been inadequate and progress difficult. Research is the life blood of any undertaking, and dental groups or societies should advance research in every way possible.

Dentistry is contributing very materially to improvement in methods, technic and various factors concerned in local anesthesia. This is being accomplished by

the continued clinical use by thousands of dentists and by the dental schools.

The dentist is at a disadvantage with regard to facilities and opportunities for research, experimentation and training in general anesthesia. Dental schools are lax in this respect.

■ *Conclusions*

Facilities for research in general anesthesia, as well as local anesthesia, should be provided in the dental school.

Some plan of undergraduate study followed by graduate courses should be available to preserve the field of usefulness for dentistry.

It is time that individual dentists, the American Society of Oral Surgeons, the American Dental Association and the dental schools develop a plan of extension of the art of general anesthesia.

The dentist has given general anesthesia to humanity and the physician adopted it later. In recent years the medical profession has made great strides in the teaching and development of anesthesiology while the dental profession, unfortunately, remained stationary and contributed little toward research in that field.

Unless the dental colleges and profession wake up from this lethargic state, some day dentists will be deprived of the privilege of administering a general anesthetic, and will have to resort to a medical anesthesiologist when it becomes necessary to employ a general anesthetic in the office.—*1149 Sixteenth Street, N.W.*

■ Medicine Not a True Science

Most of us seem to have forgotten that medicine and its various subdivisions or specialties is not a true science in the sense in which mathematics and physics are sciences. Science is not a collection of facts but the organization and generalization of those facts and the formulation and understanding of the general laws which govern them. President Conant of Harvard University emphasizes the fact that the great advances in science have come, not from the collection of new data, but from the development of new concepts. We have always been aware in a superficial way that the emotions and personality make-up of a patient may affect the physiology and pathology in that person and later may even effect anatomic changes. In the same way, we have known also that various therapeutics measures, be they surgical, chemical or psychical, may produce varying results in different patients or in the same patients at different times depending on their physical and emotional state at the time of treatment.—*Bernard B. Raginsky, "Some Psychosomatic Aspects of General Anesthesia," Anesthesiology 11:396, July, 1950.*

Meniscectomy in the treatment of lesions of the temporomandibular joint

■ *Reed O. Dingman, D.D.S., M.D., and Wilbur C. Moorman, D.D.S., Ann Arbor, Mich.*

Most of the acute inflammatory and traumatic conditions of the temporomandibular joint will respond to conservative management, which includes rest, occlusal adjustments and limitation of motion. In the long-standing, chronic conditions with internal derangement of the temporomandibular joint, conservative measures give little or no relief. For the long-standing chronic condition, in which there is interference with function, excision of the meniscus gives excellent results. At the University of Michigan we have performed 12 operations of this type during the last four years. The striking results obtained make us enthusiastic about this method of management in selected cases.

A careful evaluation of the joint condition should be made and the usual conservative measures should be attempted before surgical intervention is undertaken.

The operation of meniscectomy is indicated in those long-standing chronic progressive conditions in which there is a change in the meniscus of the joint. Several authors[1-5] have shown that this operation produces excellent clinical results with a minimum of complications. Wakeley[2] reported 20 cases. The results were excellent, both from the functional and anatomic standpoint, and all the patients were satisfied with the results of the treatment. Some of the operations were performed more than 15 years previously.

It would seem that excision of the articular disk would result in instability of the joint, with a tendency to excessive movements and a forward displacement of the condyle head. This is not true. Following meniscectomy we have found that the symptoms have disappeared, the jaw is stable and the joint functions well. Thoma[5] states that meniscectomy is indicated in the following types of cases:

1. Recurrent dislocation of the meniscus, causing repeated blocking of the condyle.
2. Fracture or tear of the meniscus, causing pain and noise on motion.
3. Blocking of the condyle.
4. Partial erosion of the meniscus in traumatic arthritis, causing irregularity in motion, noise and asynchronism.
5. Noise and cracking symptoms due to other causes.

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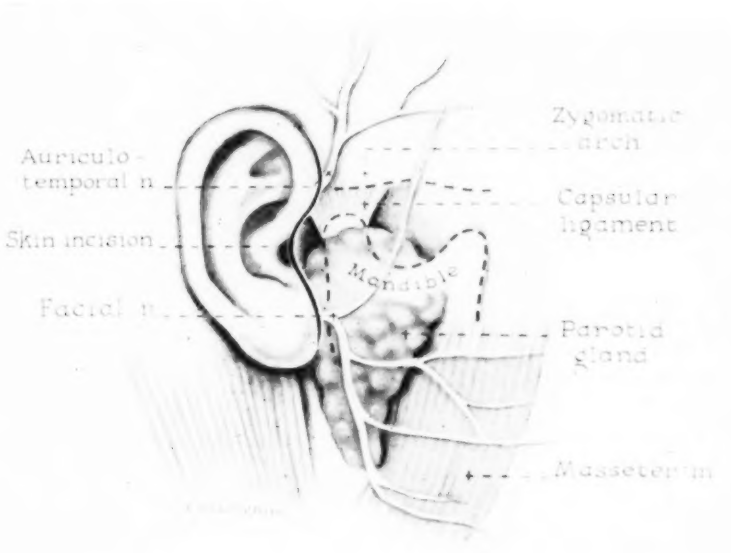

Fig. 1.—The line of the incision follows the folds on the anterior surface of the ear. The relationship of the facial nerve and the auriculotemporal nerve to the temporomandibular joint is shown

To this list we add: severe persistent chronic progressive pain in the temporomandibular joint, which interferes with function and in which none of the foregoing factors appear to be present.

Whenever possible this operation should be done under local anesthesia. The cooperative efforts of the patient under local anesthesia make it possible to evaluate carefully the function of the joint, and at the same time eliminate the hazards of a general anesthetic. Adequate premedication with morphine, scopolamine and pentobarbital sodium and well placed local anesthetic solutions take the anesthetist from the region of the operation, and also provide excellent hemostatic control.

■ *Operation*

The hair should be shaved in the temporal region and the patient prepared and draped to expose the ear and preauricular region.[6] The ear canal is lightly packed with sterile cotton. The incision is started in the fold at the anterior margin of the helix at its upper attachment (Fig. 1). It is carried downward in this fold to the upper portion of the tragus, where it is continued just inside the margin of the tragus to the anterior fold of the lobule. At this point it again becomes visible and is carried down to the lower attachment of

6. Dingman, R. O.: Ankylosis of the Temporomandibular Joint. *Am. J. Orthodont. (Oral Surg. Sect.)* 32:120 (Feb.) 1946.

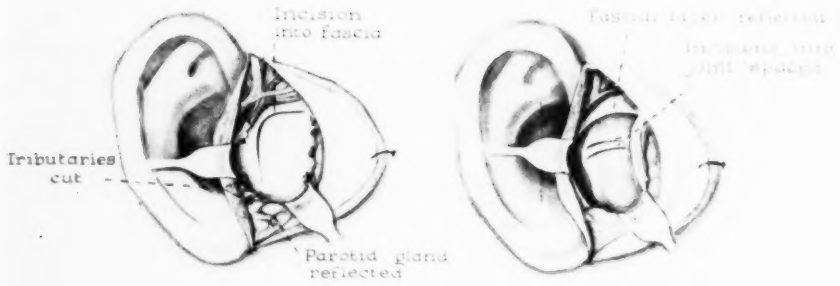

Fig. 2.—Left: The parotidomasseteric fascia is incised to expose the joint capsule. Right: The margin of the meniscus is exposed through parallel incisions into the upper and lower joint space

the lobule. The incision is carried through the skin and subcutaneous tissues, exposing the cartilage of the tragus, down to the masseteric fascia. This flap is dissected anteriorly for about 2.5 cm. and is then folded forward upon itself where it is held out of the way with an interrupted suture to the skin of the face (Fig. 2). The upper part of the incision can be made safely with regard to the seventh nerve. The lower part of the incision must be made with care because of the close proximity to the main branches of the seventh nerve (Fig. 1). The anterior tributaries of the temporal vessels are cut, ligated and retracted forward with the superior pole of the parotid gland (Fig. 2). The joint is easily located by having the patient move the jaw if under local anesthesia, and having the anesthetist move the mandible if the patient is under general anesthesia. An incision is made through the fascia, starting at the upper border of the zygoma above the anterior portion of the joint backward and downward paralleling the condyle head to the neck of the condyle (Fig. 2). Through this incision the tissues immediately over the capsule of the joint are retracted by the use of stout retractors. The joint is readily entered by means of a transverse incision paralleling the border of the meniscus into the upper compartment of the joint, and another into the lower compartment of the joint (Fig. 2). In this manner the lateral margin of the meniscus is exposed.

If the patient is under local anesthesia it is interesting to observe the joint function. The impingement of the articular disk between the head of the condyle and the articular eminence can sometimes be seen, and the point at which the grating and cracking take place can definitely be observed.

The edge of the articular disk is grasped with a hemostat. Distraction of the joint by an assistant or the anesthetist is helpful in visualizing the interior of the joint. This is done by placing the mouth prop between the posterior teeth and applying opening pressure or by placing a firm ob-

ject between the posterior teeth and pushing upward on the symphysis. The anterior attachment and the posterior attachment of the meniscus are readily severed by means of small curved, sharp scissors, one blade being placed in the upper joint cavity and one in the lower joint cavity. The medial aspect of the meniscus is cut from its attachment by the use of a small angulated end cutting knife (Fig. 3). Care must be exercised to avoid damage to the articular surface of the condyle head or the articular surface of the glenoid fossa. The joint cavity is carefully inspected for remnants of the disk and for irregularities of the articular surfaces. If negative, the capsule is carefully closed with interrupted 0000 plain catgut sutures (Fig. 3). The fascia and subcutaneous tissues are closed in layers with the same type of sutures, and 0000 Dermalon sutures are used to close the skin margins (Fig. 4). The wound is closed without drainage and a pressure dressing is maintained for 24 hours. The patient is given medication for postoperative discomfort. Antibiotic therapy is instituted and the patient is encouraged to use the jaw immediately. No attempt is made to limit motion of the mandible. Patients can usually masticate comfortably three or four days after operation. The usual hospital stay is two or three days.

In the cases operated on at the University of Michigan we had only one minor and one major complication. The minor complication was temporary interference with the temporal branch of the seventh nerve, causing paralysis to the forehead. This cleared within a period of three months. With one exception, the results were excellent, giving relief from pain and cracking in the joints and complete recovery of function. One patient was temporarily relieved following injection of alcohol into the joint region, but fibrous ankylosis subsequently developed, necessitating condylectomy (Case 7). In none of

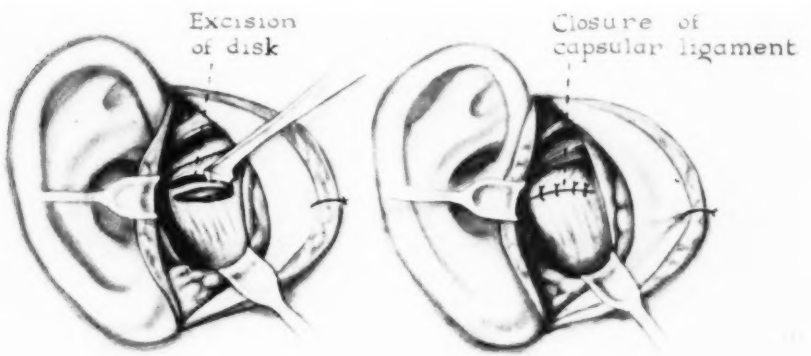

Fig. 3.—Left: The disk is removed by cutting its margins with an angulated end cutting knife. Right: The capsular ligament is closed with catgut sutures

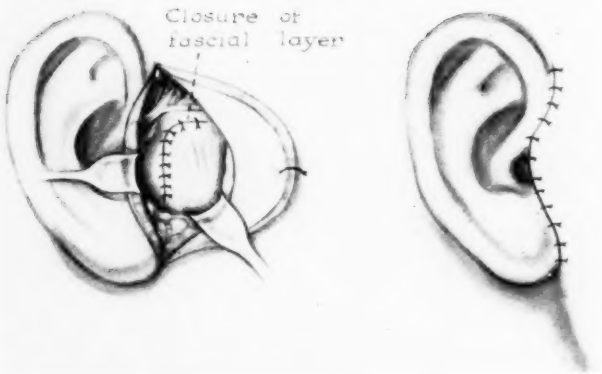

Fig. 4.—The fascia and subcutaneous tissues are closed in layers with catgut sutures, and Dermalon sutures are used to close the skin margins

the cases was there perforation of the articular disk or fragmentation. In only 3 cases was there any significant change on microscopic examination of the articular disk (Cases 6, 8 and 10).

■ *Report of Cases*

CASE 1—A white woman, 24 years old, stated that in 1941 she noticed she was unable to open her jaw completely for no apparent reason. This episode lasted only a few hours but occasional attacks occurred for five years, and the attacks became as frequent as twice a week. Prior to examination she had unbearable throbbing pain after masticating and yawning. Opening was limited to a maximum of 2.5 cm., with shifting of the mandible to the right side. The excursion to the left side was painful and greatly impaired. Roentgenographic examination of the temporomandibular joint was negative. There was extreme tenderness over the right joint.

On July 16, 1947, under local anesthesia, the joint cavity on the right side was opened and explored. The meniscus was excised completely. The condylar head was pulled down and three small irregular spurs on the anterior margin were removed.

The postoperative course was uneventful and the patient was discharged four days later. Observation at the end of three months revealed excellent results. The patient was free from pain and was able to open her mouth comfortably a distance of 3.5 cm. between the anterior teeth. On protrusion, the mandible shifted slightly toward the right side. The occlusion was good. There was slight tenderness over the head of the condyle. The incision healed with a minimal amount of scar. No complaints were registered when the patient was examined after a three year period.

CASE 2—A 30 year old white man gave a history of clicking in the temporomandibular joint, with interference of function, for a period of several years. The

patient experienced acute pain in the left temporomandibular joint during the six months previous to examination. There was no history of traumatic injury. The dental status was satisfactory. Roentgenographic examination of the temporomandibular joints was negative.

Meniscectomy was performed, under local anesthesia, in September, 1949. Pain was relieved and function was restored immediately. This patient was transferred to another location and we were unable to examine him, but through a questionnaire it was learned that he was asymptomatic at the end of one year. There was no recurrence of pain, limitation of motion or loss of function. The clicking sound was no longer present.

CASE 3—The patient was a 25 year old white male. His teeth were in excellent condition and occlusion was good. This patient had chronic subluxation with hypermobility of the right condyle of approximately three years' duration. This was associated with audible joint noises and progressive severe pain on function during the past two years. Roentgenographic examination showed anterior positioning of the head of the condyle in relationship to the articular eminence upon opening of the jaw. Closed mouth position revealed an enlarged joint space.

Meniscectomy of the right temporomandibular joint was performed on October 11, 1949. The postoperative course was uneventful and the patient was discharged in three days. One month following the operation, all symptoms were gone and function was excellent. Since that time it has only been possible to follow him through a questionnaire. The results were gratifying at the end of one year. Subluxation of the condyle has not recurred since removal of the meniscus. He has had no pain, no limitation of motion and no deviation of the mandible on opening.

CASE 4—The patient was a 27 year old white male. He was admitted to the hospital on November 29, 1949, with the complaint of severe pain in the right temporomandibular joint. He had been unable to eat or talk for several days because of the severity of the pain which had been increasing over a period of three months. Roentgenographic examination showed the condyle head anterior to the articular eminence when the jaws were open. The maxillary and mandibular molars were missing on both sides.

A meniscectomy was performed on December 2. Recovery was complete. There was no pain or clicking in the joint on motion, and no pain while eating or talking. After six months the patient was asymptomatic.

At the end of one year this patient was re-examined. He was able to eat any solid food he desired without the slightest pain. There was no deviation of the mandible on opening and no limitation of motion. The scar at the site of incision was esthetically pleasing.

CASE 5—A 21 year old white male patient complained of clicking and pain in the left temporomandibular joint for a period of three years. This was audible to the point of embarrassment while he was eating or talking. The noise of the joint was also annoying to the people sitting near him. There was a moderate degree

of pain but it was seldom severe. There was no history of injury. The dental status was good. Roentgenographic examination of the joints was negative.

Meniscectomy was performed on February 10, 1950. Recovery was uneventful. Clicking and pain in the temporomandibular joint were relieved. Examination at the end of six months showed the patient to be comfortable with no pain or clicking; there was normal movement of the mandible in all directions, and no interference with the function of the joint.

The psychological effect of the snapping joint in this case was remarkable. Apprehension, irritability and nervousness were relieved by the operation.

Observation at the end of nine months revealed a happy young man with normal mandibular movements. The joint appeared to function normally. No pain had been experienced since the operation.

CASE 6—The patient was a 27 year old white male with good teeth and good occlusion. His chief complaint was that his jaws locked out of place while he was asleep. The recurrent subluxation was associated with severe pain while eating, and clicking and snapping noises in the left temporomandibular joint. The condition had been present for a period of three or four years. Oral examination was negative. Roentgenographic examination showed hypermobility of the left temporomandibular joint.

Meniscectomy of the left temporomandibular joint was performed on March 25, 1950. The biopsy report was: "a meniscus showing mucoid degeneration of fibrocartilage; perivascular fibrosis; fibrinoid necrosis in areas. These changes are compatible with chronic trauma."

The results were good and the postoperative course was uneventful. When the patient was examined at the end of nine months there was no recurrence of pain, clicking or subluxation. There was no limitation of motion in any direction. This patient obtained complete relief from excision of the meniscus.

CASE 7—The patient was a 38 year old white male with chronic subluxation, pain and noise in the left temporomandibular joint of several years' duration. He gave the history of having been an amateur boxer for a period of 10 to 12 years, during which time he received many injuries to the jaw. Roentgenographic examination of the joints was negative.

On June 2, 1950, an unsupervised resident excised the meniscus from the left temporomandibular joint. In the course of the operation a submucous elevator was broken and lost in the joint cavity and difficulty was encountered in retrieving it.

The patient was free of pain for a period of about two weeks following meniscectomy, but was readmitted about three weeks later with severe pain in the operated temporomandibular joint. Because of limitation of motion, there was no subluxation and the joint noises had disappeared. The pain, however, was severe upon motion.

Another resident injected procaine into the region of the joint. This gave the patient relief. There was a recurrence and increase in pain after the effects of the procaine wore off. A regime of rest and liquid diet was ineffective. On the basis

of improvement after the procaine injection, alcohol was injected into the region. This was associated with severe pain, but the patient obtained relief and was discharged from the hospital on August 2. He returned again in about one month with severe pain and limitation of motion.

Roentgenographic examination revealed changes indicating erosion of the anterior surface of the articular head of the condyle and evidence of involvement of the posterior aspect of the articular eminence. The limitation was such that the patient could barely open his mouth a few millimeters. On September 9, a condylectomy was performed under local anesthesia. Extensive intracapsular and extracapsular fibrosis was encountered.

Four months after condylectomy there had been no recurrence of pain. The only loss of function was that usually associated with condylectomy; namely, deviation of the mandible toward the operated side upon opening the mouth, inability to shift the mandible to the opposite side and shift of the mandible toward the operated side on protrusive motions.

In this case, the meniscectomy was unskillfully performed, causing damage to the articular surfaces of the joint cavity. This surgical trauma resulted in the complication of fibrous fixation of the joint, which undoubtedly finally would have gone on to bony ankylosis.

CASE 8—The patient was a 56 year old white woman who had been edentulous for many years. She had numerous complaints, the chief of which was inability to eat without pain for the last eight months. This was associated with audible noises in the temporomandibular joint. She had lost weight from 110 to 78 pounds. She was known to have arthritis in other joints of the body for six years. She was unable to talk without severe pain, clicking and cracking in the temporomandibular joint.

Meniscectomy was performed on the right side on August 8, 1950. There was some postoperative discomfort due to soreness about the joint but this was relieved by codeine given just before meals. Codeine was necessary only for three or four days. The patient remained in the hospital for about 10 days for other treatment. On leaving the hospital the patient was able to eat without pain and clicking for the first time in eight months. She was very happy about the outcome of the operation.

Microscopic examination revealed: "Chronic hypertrophic villous synovitis, proliferation of synovial lining cells and fibrous thickening of enlarged synovial structure. No significant cellular infiltration. Degenerative changes in fibrocartilage including mucoid degeneration and liquefaction necrosis. No evidence of any specific chronic infectious granuloma."

CASE 9—The patient was a 34 year old white man. All of the teeth were present with an overbite relationship anteriorly and slight shift of the mandible to the right side. Roentgenographic examination showed questionable hyperplasia of the right condyle. The patient had experienced severe pain with clicking and snapping in the right temporomandibular joint for three years.

A meniscectomy was done on September 1, 1950, under general anesthesia.

The course in the hospital was uneventful, and the patient was discharged on the fourth postoperative day with no pain or clicking and with good function of the temporomandibular joint.

Observation of this patient four months after meniscectomy revealed no evidence of his original symptoms. The pain and snapping were no longer present. He was able to talk and chew solid foods without discomfort. There was good function of the temporomandibular joint with no limitation of motion in any direction.

CASE 10—The patient was a 32 year old white male. Eight months previously this patient fell from a truck, striking his chin and elbow. The accident was followed by severe pain in the right temporomandibular joint. The mandibular molar teeth were missing but the remaining teeth were in a good state of repair. There was no history of other painful joints. The patient experienced clicking and snapping and severe discomfort in the region of the right temporomandibular joint and difficulty in opening his mouth. Right lateral movement was normal while left lateral movement was painful and limited. He could open his mouth 1.5 cm. Roentgenographic examination revealed limitation of motion of the right condyle upon opening.

On June 5, 1950, meniscectomy of the right temporomandibular joint was done. Microscopic examination of the meniscus revealed: "Fibrocartilage showing retrograde changes. Old inactive chronic synovitis. No neoplasm."

One month after the operation the patient was comfortable. The excursions of the mandible in all directions were normal except lateral motion to the left, which was reduced approximately 50 per cent. The patient could open his mouth to the fullest extent without discomfort. There was residual paralysis of the muscles supplied by the temporal branch of the seventh nerve. Three months later this residual paralysis had almost disappeared. The function was excellent.

One year after meniscectomy the patient was comfortable and opened his mouth with ease, without pain a distance of 4.5 cm. He was completely relieved of his symptoms.

CASE 11—A 36 year old white male, in excellent condition, who was first seen early in October, 1950, complained of severe pain in the left temporomandibular joint. This pain had first been noticed by the patient about one year previously when he was yawning. This pain subsequently became associated with a mild clicking sound in the joint.

Six months after the onset, occlusal adjustments were made and the patient's teeth were wired together for a period of about six weeks; neither treatment gave him any relief. Examination revealed a normal complement of teeth in a good state of repair.

In spite of a period of rest and occlusal adjustment the pain became progressively worse until it was unbearable. Roentgenographic examination was not significant.

In October, 1950, a meniscectomy was performed under local anesthesia in order to relieve the pain. Following the operation the patient recovered completely and had no pain or clicking in the temporomandibular joint. He was able to open

his mouth to a normal extent. Motions in all directions were within normal limits. He was able to eat, talk and yawn without pain. Examination three months after the operation showed a full range of motion with no recurrence of pain or clicking.

CASE 12—A 42 year old white male gave a history of painful clicking in the left temporomandibular joint for a period of four years. This was audible to the point of embarrassment. There was a moderate degree of pain associated with the clicking and snapping noise. The patient had been edentulous for many years and three sets of dentures had been constructed in an attempt to relieve the symptoms.

Conservative treatment was tried for a period of several weeks but gave no relief. Roentgenographic examination was negative. In November, 1950, a meniscectomy on the left temporomandibular joint was done, under local anesthesia.

During the operation the function of the joint could be examined carefully. On opening the mouth near the end of the excursion of the condyle in its forward path, the meniscus seemed to be impinged between the articular head and the eminentia. The lag of the meniscus and its failure to move with the condyle head appeared to be the cause of the clicking sound as the condyle head was released and snapped anteriorly. The meniscus was excised. The postoperative recovery was uneventful.

Observation at the end of one month and again after three months revealed no limitation of motion in any direction and the patient could open his mouth to the normal extent without clicking or pain.

Fig. 5.—A healed incision two weeks after meniscectomy

■ *Summary*

In view of the excellent results obtained in 11 of the 12 cases in which the meniscus was excised from the temporomandibular joint, meniscectomy has a definite place in the treatment of certain types of temporomandibular joint conditions. This operation is indicated in cases of progressive degenerative changes with internal derangement of the temporomandibular joint in which there is pain, cracking, snapping, blocking and interference with function. The results in this series were uniformly good with the exception of one case explainable on the basis of unskilled surgery. In 11 cases there was minimal postoperative disability, elimination of pain and noise and restoration of excellent function. In one case, with significant complications, there was recurrence of pain which was relieved by a condylectomy.

All of these patients were between 21 and 42 years of age, with the exception of one who was 56 years of age. The joint disturbances treated by meniscectomy were chronic and progressive.

Local anesthesia, the anesthetic of choice, was used in all cases except one in which local anesthesia was contraindicated.

No attempt is made to limit the motion of the jaw postoperatively. Immediate function is encouraged.

Partial facial paralysis may be a complication. In one instance, it involved the frontal area only and was transient.

The auricular incision gives adequate exposure to the temporomandibular joint and is preferable from the standpoint of safety to the branches of the seventh nerve.

The operation should be executed with extreme care to avoid injury to the seventh nerve and to the articular surfaces of the joint. The postoperative scar is negligible (Fig. 5).

Myasthenia gravis

■ *Charles W. Keeling, D.D.S., Kansas City, Mo.*

Myasthenia gravis is a comparatively rare disease of unknown etiology, which involves the striated muscles of the body. The smooth muscles are not affected except in a limited degree, according to Ford.[1] The heart, intestines and sphincter pupillae are not affected.

The muscles of mastication are among the first to be involved and are constantly affected to a greater or lesser degree. The muscles for deglutition and speech are often affected.

Among the chief complaints are "dropping of the jaw" and inability to chew and swallow. In severe cases, the patient may have to be tube fed. The speech may be slow, hesitant, difficult and often slurred.

The fact that the muscles of mastication and deglutition are so uniformly affected, makes the disease of special interest to the dentist. The motor muscles of the eyes are involved early in the disease. Diplopia and ptosis of one or both eyes are common findings. The ptosis of the eyes and drooping of the face give the patient a sad and sorrowful expression.

Lewin[2] is of the opinion that people with small and flabby muscles are the most susceptible to the disease, and that the muscles most in use are the first muscles to be attacked. This is understandable as the muscles for mastication, deglutition and speech and the muscles of the eyes are among the striated muscles most used. Other muscles of the body are also affected when put to excessive use.

1. Ford, Frank R., *Diseases of the Nervous System in Infancy, Childhood and Adolescence*, ed. 2. Springfield, Ill.: Charles C Thomas, 1946, p. 1030-1034.

2. Lewin, Phillip, Myasthenia Gravis. In *Brennemann's Practice of Pediatrics*. Hagerstown, Md.: W. F. Prior Company, Inc., 1948, vol. IV, p. 40-43.

Patients afflicted with the disease are usually at their best early in the morning and gradually become worse during the day. If the patient is asked to flex the arm and leg several times in succession, the muscles soon become so fatigued that movement is impossible.

The patient suffers from extreme exhaustion and weakness, loses weight rapidly, probably because of inability to eat, and as the disease progresses other muscles of the body are involved. When the muscles of respiration become affected, death from suffocation soon follows. According to Ford,[1] weakness and exhaustion are universal findings of the disease and may reach the degree of making the patient bedfast.

Stevenson[3] found no atrophy or degeneration of the muscles. A small round cell infiltration was the only finding. Neither was there any constant lesion in the nervous system. These findings are consistent with Ford[1] and Lewin.[2]

In the four patients seen at Research Clinic there was a lack of clinical, laboratory or roentgenographic findings contributory to the disease, a mediastinal mass in one patient being the probable exception. Other than the mediastinal tumor, the findings in all the patients were consistent with persons in good health. There was no evidence of focal infection. The dentition in one patient was exceptionally good. The disease in two cases seemed to follow closely a debilitating condition. In one case, the disease followed repeated attacks of "flu"; another followed amenorrhea.

There was no pain or soreness in any of the muscles. The chief complaints were weakness of the jaws, inability to chew and severe generalized weakness and fatigue. Even though the statistics show about 50 per cent of the cases with some form of thymus abnormality, Ford[1] does not consider these abnormalities of the thymus gland, demonstrated either by physical or roentgenographic examination, significant because the abnormality is not consistent or specific and because a normal gland is found in a large percentage of the cases.

■ *Treatment*

Neostigmine, first used by Walker[4] in 1934, seems to be the drug of choice and gives the best results. It is given either orally or hypodermically at regular intervals during the day in an amount sufficient to control the disease. Other drugs, such as ephedrine sulfate and glycine, have been used with varying degrees of success.

A positive therapeutic test with the use of neostigmine (Prostigmin) is considered diagnostic for the disease. Each of the patients examined at the Research Clinic was given the therapeutic test. Three of the cases responded so quickly and completely that the response was almost dramatic. A fourth experienced considerable relief but in no way approaching complete relief.

The treatment of myasthenia gravis at the present time is symptomatic and not specific. The dosage of the drug and interval given may vary considerably with different patients.

The prognosis is grave and doubtful

3. Stevenson, Lewis. Myasthenia Gravis. In *Textbook of Medicine*, ed. 5. Cecil, R., editor. Philadelphia: Saunders Company, 1942. p. 1510.

4. Walker, M. B., Treatment of Myasthenia Gravis With Physostigmine. *Lancet* 1:1200 (June 2) 1934.

even in those cases responding favorably to treatment.

Charles T. Stone and J. Alfred Rider, Galveston, Texas, presented a paper before the American Medical Association at Atlantic City, June 6-10, 1949, dealing with the results obtained with tetraethylpyrophosphate in the treatment of myasthenia gravis. They claim certain advantages with the use of this drug over previous medicaments.

■ *Reports of Cases*

CASE 1—A woman, aged 61, entered the Research Clinic August 7, 1948, with the chief complaint of weakness and fatigue of the lower jaw. For the past two years her jaws became very tired when she chewed her food. This had gradually become more noticeable and at times was so pronounced that she had to assist her lower jaw with her hands. It was more pronounced during the noon and evening meals. She had not noticed any particular generalized weakness. Her appetite was good and her weight was constant. She had moderate bilateral deafness for eight years. She experienced some fatigue and aching in the right knee with gradual enlargement of the inner aspect.

The patient was married and had two children. She had had no operations or serious illnesses. Her mother died of cancer of the stomach. There was no history of tuberculosis, diabetes or mental illness in the family. One daughter died with myasthenia gravis.

The patient's blood pressure was 150/80; pulse was 88; temperature was 98.6. The audiometric examination showed a nerve deafness involving chiefly the basilar turn of the cochlea. There was a slight enlargement of the thyroid in the midline.

The orthopedic examination showed osteoarthritis of the right knee.

Neurologic examination revealed weakness in muscles of the jaw; ocular fundi were normal; pupils were equal and reacted to light and for accommodation; there was no ptosis. Other cranial nerves were normal. All other systems were normal. The reflexes were normal. The patient had no undue tensions or conflicts.

Clinical examination of the mouth showed absorption of the alveolar ridge in the upper anterior region causing a flabby upper ridge and an unstable seat for the denture. There was some loss of vertical dimension. The muscles of mastication tired easily on chewing. The patient frequently used her hands to assist her jaws in chewing. The tongue was affected slightly.

The urine examination was negative. Hemoglobin was 71 per cent; red blood count was 3,740,000; white blood count was 5,000; color index was 0.96. The blood chemistry showed nonprotein nitrogen 31.0 mg.; sugar 126.0 mg. The blood sedimentation rate was 25 mm. in 60 minutes. The basal metabolic rate was minus 2 per cent. The electrocardiogram was normal. Wassermann and Kline tests were negative.

Roentgenographic and fluoroscopic observations of the chest, including the lungs, heart, great vessels and mediastinal structures, showed no evidence of pathology. Roentgenograms of the right knee showed evidence of extensive hypertrophic changes suggesting an osteoarthritic type of involvement.

Roentgenograms of the teeth and jaws showed the upper jaw edentulous. The lower left molars were missing. There were no root fragments or residual areas. Remaining lower teeth were normal.

A therapeutic test for myasthenia gravis with neostigmine was given August 31, 1948. The patient was given gum to chew. Definite fatigue of the lower jaw was noted by the observer in the patient after approximately 143 chewing motions. The facial expression registered fatigue, and there was a slight drooping of the eyelids.

Neostigmine methylsulfate, 1.0 mg., combined with atropine sulfate, 1/100 grain, was given subcutaneously. After 20 minutes the chewing test was repeated. The patient chewed rapidly without hesitation or fatigue for 430 times.

A diagnosis of myasthenia gravis was made.

Surgery of the flabby alveolar ridge may be necessary if a denture cannot be made to seat properly. If the upper denture cannot be built up sufficiently to establish the proper vertical dimension, a splint covering the occlusal surfaces of the lower teeth was recommended.

The medical recommendations were physiotherapy, heat, massage and exercise of the right knee to prevent further deformity; neostigmine bromide of sufficient dosage to control the disease; 25 per cent potassium chloride, 1 dram three times a day; large intake of vitamins and iron for anemia.

Little can be done for correction or improvement of this type of deafness. Nicotinic acid, 50 mg. three times daily, and a hearing aid were recommended for the patient.

CASE 2—A woman, 23 years of age, came to Research Clinic November 22, 1948, complaining of weakness in jaws, arms and legs.

She was apparently in excellent health until 1947, when severe amenorrhea developed. She was examined at that time, a basal metabolic rate was taken, and thyroid therapy was instituted. The menses began again and were fairly regular. In August, 1947, the thyroid was discontinued and she remained well until May, 1948, when she complained of a generalized fatigue and weakness in the legs. At times the legs would buckle under her, particularly when climbing stairs. Thyroid extract was administered again, but she continued to complain of weakness. Shortly after this, she noticed fatigue and weakness of her lower jaw while chewing. About the same time she noticed a weakness of the arms, particularly with abduction. During October, 1948, she had considerable difficulty with her speech. This was particularly noticeable after excitement. She had lost about 12 pounds in the past few months. Her appetite was fair. She was not particularly nervous at this time, she seemed stable and gave a good clear history.

The family history was noncontributory.

The patient was married, has had no pregnancies, operations or serious illnesses. Her normal weight was 130 pounds; present weight 118 pounds. The blood pressure was 118/70; pulse 72; temperature 98.6.

Dental examination of teeth and oral cavity revealed no focal infection. She had 30 vital and healthy teeth without cavities or fillings. There was a mild gingivitis

caused by a mild accumulation of salivary and subgingival calculus. The oral mucosa was normal. There was some weakness of the tongue. The jaws became tired while chewing, and it was difficult for the patient to hold her teeth in contact.

The muscle test showed diplopia at this time with some drooping of the lids. Vision was good in both eyes. Results of other eye tests were negative.

The sensory system was normal. Motor system showed generalized weakness, especially of extremities. The reflexes were hypoactive but equal. There were no pathologic toe signs. Cerebellum tests were normal.

Laboratory findings, including urinalysis, blood count and smears, blood chemistry, basal metabolic rate and sedimentation rate were all within normal limits. Wassermann and Kline reactions were negative.

The roentgenographic examination was negative.

A therapeutic test was made using 2 cc. of neostigmine methylsulfate, combined with 1/100 grain atropine sulfate in hypodermic injection. Prior to the injection, the patient was unable to raise her head from the pillow, her speech was slurred and she was unable to raise either leg from the bed. She was also unable to raise either arm. Fifteen minutes after the injection, she was able to speak rapidly and clearly without error. The movement of her arms and legs was normal, and she was able to raise herself to a sitting position unassisted. The test was strongly positive for myasthenia gravis.

A diagnosis of myasthenia gravis was made.

Neostigmine methylsulfate in doses of sufficient size and frequency to control the disease and a high vitamin intake were prescribed.

CASE 3—A man, aged 37, entered the Research Clinic January 17, 1949, with the complaints of weakness and drooping of the jaws, inability to chew and generalized weakness and fatigue over a period of the last five months.

In August, 1948, the patient had influenza followed by a second attack shortly afterward. He had no strength in his jaws and the jaws seemed to drop down. He could close his jaws with his hand but could not chew. There was no pain. Gradually his legs and arms became weak and he had difficulty climbing stairs. He developed double vision November 15, 1948, and also some tingling in his hands and feet, but this improved. He had lost 20 pounds in weight and had become progressively weaker. He had difficulty swallowing. His eyelids drooped, and there was some weakness in his neck, making it difficult to raise his head. There had been no associated pain and no exacerbations of trouble. His condition gradually became worse. His appetite was fair with no food intolerance, nausea or vomiting. He had been nervous since his present illness and suffered from mild insomnia.

The family history was irrelevant.

The patient was married, with no children. He had had pleurisy and influenza. He had had no operations. Blood pressure was 118/76; pulse 92; temperature 97.6.

There were carious areas in three teeth, one nonvital tooth without roentgenographic evidence of pathology, a moderate accumulation of salivary and

subgingival calculus causing some gingivitis and some recession of the alveolus. There was no other evidence of focal infection. The anterior third and lateral borders of the tongue were smooth and bright red in color, which suggested a vitamin deficiency. There was no noticeable weakness of the tongue. The muscles of mastication were weak and fatigued, causing a decided drooping of the lower jaw. The teeth could not be brought in contact. Even though the patient made an effort to close his jaws, the teeth were still fully one-half inch out of contact (Fig. 1). There was absolutely no evidence of contraction of the masseter muscles on digital examination while the patient was attempting to chew. There was considerable dysphagia.

Examination of the eyes revealed some intermittent double vision with occasional dropping of the lids. The pupillary and ophthalmoscopic examinations were negative.

There was some fatigue of muscles in the arms, legs and neck. The strength of the muscles returned to some extent with rest. There were no other pertinent findings.

Laboratory findings: The blood, urine, basal metabolism and electrocardiogram were all within normal limits.

Roentgenographic and fluoroscopic studies of the chest revealed a definite fusiform swelling, more pronounced on the left side than the right of the supracardiac structures, which in the lateral view seemed to lie in the mediastinum. With a history of myasthenia gravis, the mass was indicative of a thymic type of tumor. Roentgenograms of the skull, abdomen and pelvis were negative. Roentgenographic examination of the temporomandibular articulations showed the heads of the condyles in complete subluxation when the mouth was open (Fig. 2).

Fig. 1.–Photograph shows extent the patient can close his jaws as a result of the affliction of the muscles of mastication

The department of thoracic surgery confirmed the roentgenographic findings and recommended removal of the growth for two reasons: (1) in an effort to alleviate the myasthenia gravis; (2) the lesion might be malignant or potentially so.

A therapeutic test with the injection of neostigmine was made. The patient experienced some improvement but nothing approximating complete relief.

The diagnosis was myasthenia gravis in a severe form.

Treatment consisted of thyroid, rest, well balanced diet supplemented with high concentration of vitamins in an effort to build up the patient for chest surgery

and neostigmine in sufficient amount to control the disease.

CASE 4—A man came to the Research Clinic May 12, 1949, with the chief complaint of dysphagia, dysesthesia, ptosis and a generalized weakness.

The patient stated that he was in good health until the spring of 1947, at which time he began to notice that his speech was thick and that it was difficult to articulate clearly. At about the same time he noticed drooping of the eyelids, especially the left, and difficulty in swallowing. He consulted a physician who prescribed tablets, but the condition failed to improve.

His present physician made a diagnosis of myasthenia gravis by means of a neostigmine injection test. Since then the patient used neostigmine regularly. At first he used 4 to 5 mg. daily; then he used 10 mg. daily. He was gradually becoming weaker. He had not been given

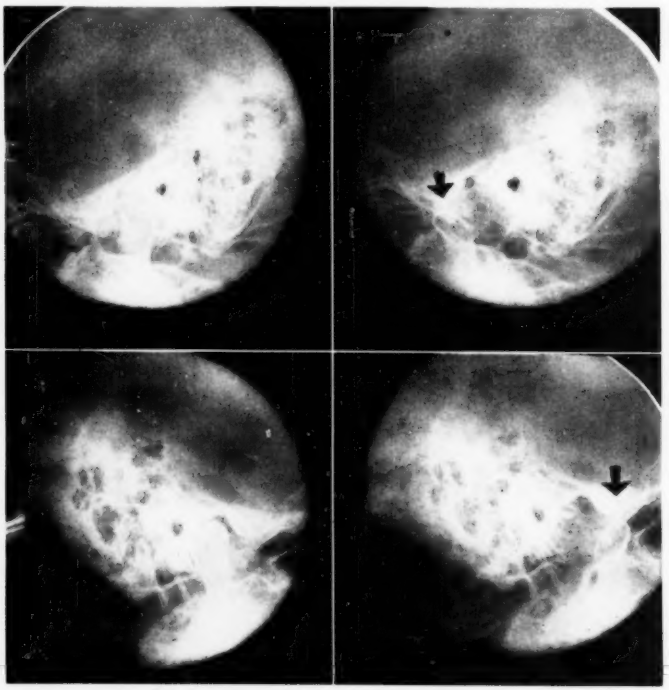

Fig. 2.—Above: Left temporomandibular articulation in open and closed positions. Below: Right temporomandibular articulation in open and closed positions. Open positions are on the right. Note subluxation of the heads of the condyles in the open position due to relaxation of the muscles of mastication.

injections of prostigmine except for diagnostic tests.

The patient had lost 20 pounds in the last six months because of his difficulty in chewing and swallowing. During the past two weeks, he complained of a sensation of heaviness and aching in the back of his neck. He tired easily and had experienced generalized muscular weakness the last two years. Any violent exercise caused him difficulty in breathing. His appetite was good with no nausea or vomiting. Occasionally he had abdominal cramping and loose stools after taking neostigmine.

The patient was 58 years of age and married. He had had typhoid fever at 4 years of age. He had had no operations. His heart was good. His blood pressure was 136/90; pulse 84; temperature 97.8. The laboratory findings were within normal limits except a few white blood cells in the urine and prostatic smear. Wassermann and Kahn reactions were negative. Basal metabolic rate showed minus 15 per cent.

The patient had difficulty swallowing, chewing and speaking. Ptosis was more pronounced in the left eye, and diplopia was present with objects at a distance. He had generalized weakness with heaviness in his chest and a staggering gait. The motor weakness was more pronounced in the upper extremities and bulbar innervated areas. All other medical findings were essentially negative.

The patient had great difficulty in eating. He could not eat without neostigmine and then only soft foods. His difficulty in chewing and swallowing were the first symptoms. His tongue became weak. The patient could, with effort, get his teeth in contact but only for an instant. His jaws immediately flew open. The teeth were one-half inch apart (Fig. 3, left). No contraction of masseter muscles could be felt when the patient was chewing. There was definite gingivitis caused by a heavy accumulation of salivary and subgingival calculi. The remaining upper teeth were badly broken down.

Roentgenograms showed a large apical area in the upper right molar region. There was recession of alveolus around the remaining lower anterior teeth. Roentgenograms of the temporomandibular joints, with the mouth open and closed, showed normal joint space on each side and the condyles in normal positions.

Roentgenographic examination of the chest, abdomen, kidneys and urinary tract, showed nothing suggesting pathology.

A diagnostic test was made by injecting 1 mg. neostigmine methylsulfate with 1/150 grain atropine sulfate intravenously. In approximately one minute a great improvement in articulation, swallowing and ptosis was noted (Fig. 3, right). There was also improvement in the skeletal muscular strength.

Treatment recommendations were removal of all remaining upper teeth and replacement with a full upper denture and thorough scaling of remaining lower teeth and a partial lower denture.

Neostigmine injections as needed and also neostigmine hydrobromide and potassium chloride orally were advised.

Summary

Four cases of myasthenia gravis have been shown and proved with the neostigmine therapeutic test. The involvement of

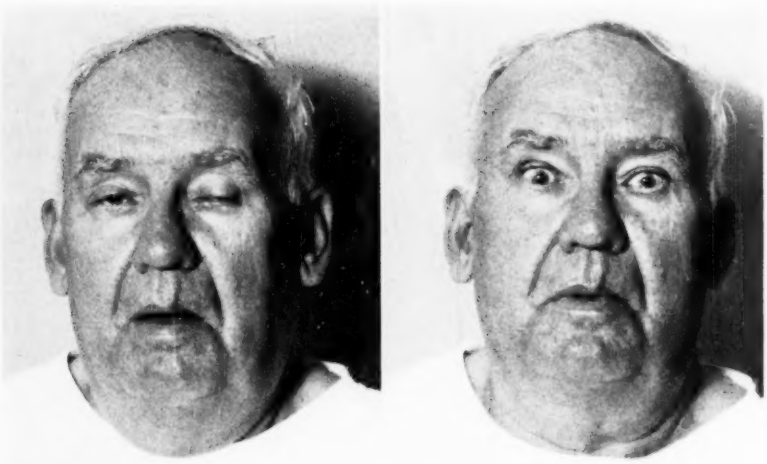

Fig. 3.—Left: Note inability to close the jaws, ptosis of eyelids and drooping of the face. Right: Twenty minutes after injection of neostigmine patient was able to close his jaws and open his eyes

the muscles of mastication was constant in all cases and was one of the first symptoms to be noted by the patients.

Extreme weakness and fatigue of the muscles, especially the muscles of mastication, drooping of the lower jaw, inability to hold the teeth in contact, difficulty in swallowing and ptosis of the eyelids are constant findings and should alert the dentist to the disease as he may be the first to see the patient. Three cases had generalized muscular weakness and fatigue with a loss of weight. One case was not so severe. Two cases had diplopia and ptosis. Two cases were mild.

Three cases responded to the neostigmine therapeutic test so completely that the response was spectacular. One case responded, but not to a degree that all symptoms were relieved.

Roentgenographic and fluoroscopic examination of the chest showed a mediastinal tumor in one case. Three cases were negative.

There were no other medical findings contributory to the disease.

A response to the therapeutic test with neostigmine is considered diagnostic in myasthenia gravis.—*107 West Linwood Boulevard.*

A technic for open reduction of fractures of the mandibular condyle

■ *Fred A. Henny, D.D.S., Detroit*

The surgical treatment of fractures of the mandibular condyle has long been a difficult problem in the field of oral surgery. Predominant thought has always leaned toward conservative therapy consisting of simple immobilization of the jaws[1-4] or immobilization with an interposing pad between the posterior teeth.[5,6] Usually excellent results are obtained by conservative treatment. However, a critical review of all such cases shows a considerable number of compromise results. These may take the form of deviation to the affected side upon opening, inadequate opening, or ankylosis. Fracture of the condyle with displacement, accompanied by complete edentia, partial edentia, or massive trauma to the teeth, providing an inadequate means of immobilization, would forecast relatively poor results. Impacted fractures or fractures with overriding of the fragments so that considerable soft tissue is interposed between them also portend future difficulty.

Several investigators[5,7,8] recognized these complicating factors and, in an attempt to produce better results, have resorted to open operation with internal wire fixation or external pin fixation. The line of surgical approach has universally been a preauricular one. This method of reduction has been used in selected cases in this hospital but it has been discontinued because of resultant complications which are:

1. Lack of adequate access inferiorly.
2. The medial aspect of the condylar head is not available; an important factor which will be brought out later.
3. Repeated damage to one of the ramifications of the facial nerve.

Since most fractures of the condyle are through the base of the neck, the preauricular approach is inadequate. Extension of the incision in an inferior direction may grossly endanger the facial nerve (Fig. 1). To have a well-healed fracture, accompanied by a partial paralysis of the face, is certainly no surgical triumph.

It has long been the policy in this clinic to resort to internal wire fixation of all fractures of the mandible that do not yield to conservative measures.[9] Open operation on fractures of the mandibular

Read before the thirty-first annual meeting of the American Society of Oral Surgeons, San Francisco, October 13-15, 1949.

Associate surgeon, division of oral surgery, Henry Ford Hospital, Detroit.

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7. Thoma, K. H., Fractures and Fracture Dislocations of the Mandibular Condyle. *J. Oral Surg.* 3:3 (Jan.) 1945.

8. Silverman, S. L., A New Operation for Displaced Fractures at the Neck of the Mandibular Condyle. *D. Cosmos* 67:876 (Sept.) 1925.

9. Henny, F. A., Fractures of the Mandible. *J.A.D.A.* 29:1340 (Oct.) 1942.

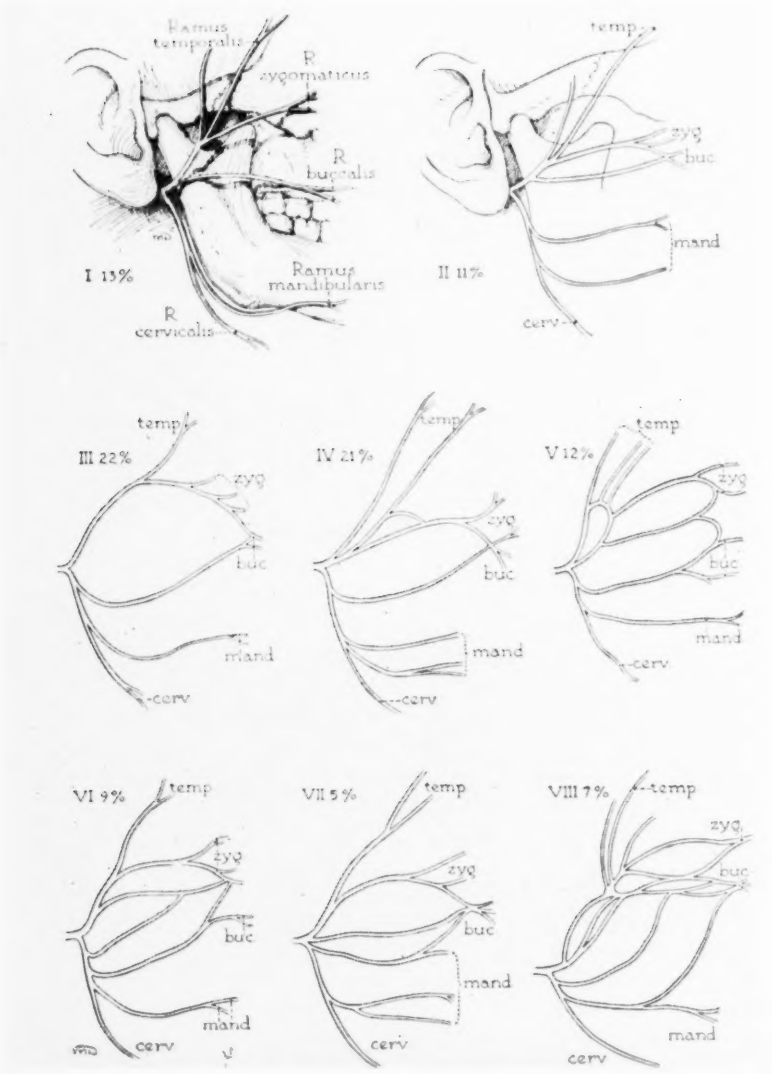


Fig. 1.—Major types of facial nerve branching and anastamosis. This illustrates the danger of approaching the condylar neck and any fractures that might extend from the sigmoid notch down into the ramus. (McCormack, L. J., and others, *Surgical Anatomy of the Facial Nerves. Surg., Gynec. & Obst. 80:620, June, 1945*)

condyle, when properly indicated, would be the method of choice if the following dictums could be met:

1. The operation must promise a better result than by conservative treatment.

2. Operation would not unduly endanger the facial nerve (Fig. 1).

3. The procedure would not further damage the meniscus.

Following the above dictums an approach was made through an incision at the angle of the mandible—the same route Risdon[10] has described so ably for low mandibular arthroplasty. It was felt that, if the fracture line could be reached from this approach, access might be better and there would be less possibility of damage to the seventh nerve and also less chance of damage to the meniscus. It was realized, of course, that retraction would necessarily be great and might create a considerable problem if a small incision was employed. At that time an endotracheal anesthetic, with the tube passed through the nose, was used. As the fracture line was approached it became obvious that relaxation was inadequate, and 60 units of curare were administered intravenously. This induced complete muscle relaxation and allowed free access to the condylar neck. On some occasions it has been necessary to give 30 additional units of curare to provide for adequate exposure of the fracture region.

This technic has been used in 24 fractures of the mandibular condyle, which include both medial and lateral dislocations of the condylar head. Repositioning and subsequent wiring of the bony fragments have produced good anatomic and functional results. Postoperative occlusion and excursion of the jaws have been excellent. In a single case, which was one of the first, the condylar head was displaced medially and, although it was relocated and wired in its proper position, the displacement recurred in a few days. The technic was altered in other cases. This alteration consisted primarily of detaching the insertion of the external pterygoid muscle where it attaches to the interarticular fibrocartilage and the neck of the condyloid process. This detachment eliminates the postoperative muscle traction on the condylar head, thereby eliminating the possibility of postoperative displacement of the condyle. Considerable care in detaching the insertion of the external pterygoid must be practiced, since the internal maxillary artery is just medial to it.

In no case has there been seventh nerve damage of any degree. On several occasions one of the inframandibular twigs has been clearly visible in the field of operation. These have been carefully dissected out for a considerable distance before retraction. Testing of the twig at completion of operation has always produced the expected muscle reaction. This factor of being able to dissect out a branch of the nerve is one of the chief advantages of the operation. If careful sharp dissection is carried out under strict hemostasis, the nerve can easily be identified and retracted, thereby preserving it.

■ *Technic*

After the patient has been anesthetized and the tube introduced, the skin is

10. Risdon, Fulton, Ankylosis of the Temporomaxillary Joint. *J.A.D.A.* 21:1933 (Nov.) 1934.

sterilized and the drapes are applied so that the corner of the mouth may be visualized. An incision, approximately 5 cm. in length, is made through the skin at the angle of the mandible (Fig. 2, *A*). Dissection by sharp means is carried down through the platysma and superficial cervical fascia. Careful hemostasis is maintained. By cautious dissection the wound is deepened. If one of the ramifications of the facial nerve is in the field, it will be clearly seen. Application of slight pressure with a hemostatic clamp will immediately bring forth muscle reaction in the lower lip. If a nerve filament is encountered it is carefully dissected out and retracted, either superiorly or inferiorly, as the case may dictate. The dissection is then con-

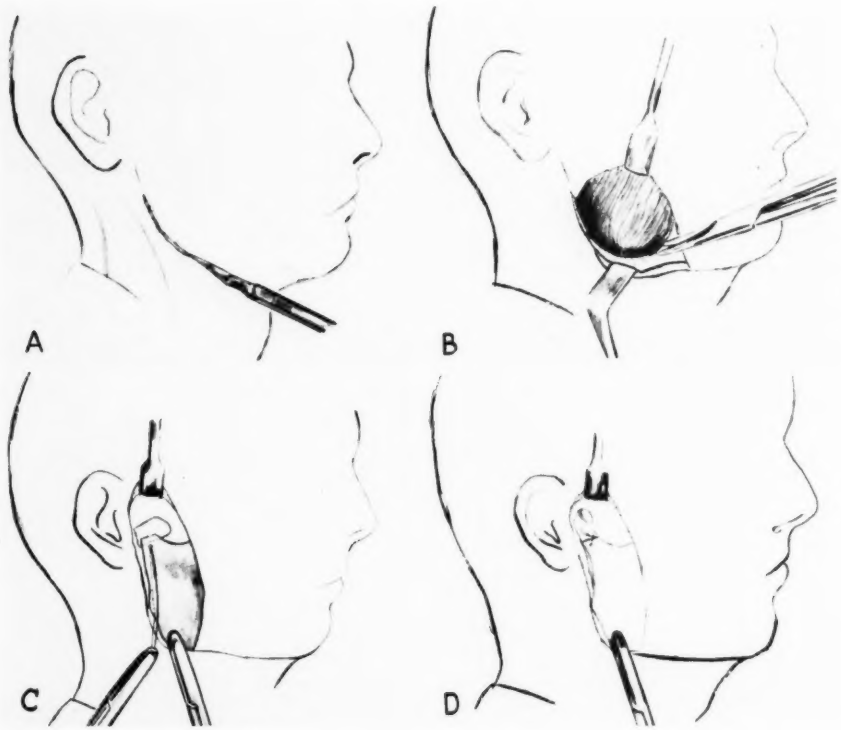


Fig. 2.—A: Incision at angle of mandible should be placed approximately 1 cm. inferior to the bony angle of the mandible to include the inferior branches of the facial nerve in the superior flap. B: The masseter muscle is exposed and divided at the angle. C: The tissues are forcibly retracted in the superior direction. A drill hole is placed through the inferior fragment and, after threading wire through the hole, the fragment is retracted in an inferior direction, bringing into view the condylar neck. D: Operation complete with ligation of the two fragments.

tinued until the masseter muscle is exposed. It is excised at the inferior and posterior borders of the mandible and retracted superiorly (Fig. 2, *B*).

At this point the first dose of curare is given. This consists of 60 units, administered intravenously. With forcible retraction and dissection by elevation of the periosteum, the fracture line is approached. A bone grasping forceps is applied at the angle, and considerable force is exerted in an inferior direction. After placing a flat metal instrument medial to the superior portion of the lower fragment, a drill hole is placed through the bone. A 25 gage stainless steel or tantalum wire is then threaded through the opening. The wire can be used for application of a retracting force (Fig. 2, *C*). By careful dissection, the condylar fragment can then be located and brought into the wound. A drill hole is placed through this fragment and the wire brought through and twisted up in the usual fashion (Fig. 2, *D*). The masseter muscle is placed back in its bed and sutured down securely with chromic catgut. The wound may be closed without drainage. A pressure dressing is applied and is usually kept in place for three days.

■ *Comment*

This procedure is not a simple panacea for what is occasionally a difficult problem. The operation is a difficult one, but it does produce excellent results in those cases in which open reduction is indicated.

Use of chlorophyll ointment in impacted third molar wounds

■ *Joseph C. Tam, D.D.S., M.S.D., and Henry B. Clark, Jr., M.D., D.D.S., Minneapolis*

Following reports by Bowers[1] and Goldberg[2] regarding the healing properties of water soluble chlorophyll in miscellaneous wounds of the body and in treatment of Vincent's infection and periodontitis, a clinical trial was made using an ointment containing chlorophyll in lower third molar impaction wounds with the hope of achieving primary healing.

■ *Procedure*

Twenty-four completely unerupted lower third molar teeth were included in the study. The extractions were performed

From the division of oral surgery, School of Dentistry, University of Minnesota, Minneapolis.

1. Bowers, W. F., Chlorophyll in Wound Healing and Suppurative Disease. *Am. J. Surg.* 73:37 (Jan.) 1947.

2. Goldberg, S. L., The Use of Water Soluble Chlorophyll in Oral Sepsis. *Am. J. Surg.* 62:117 (Oct.) 1943.

Table 1

Results of using chlorophyll ointment in extraction wounds

Results	Number of cases	Per cent
Primary healing	16	66.66
Failure	8	33.33
Total	24	100.00

by graduate students and staff members in the oral surgery clinic of the dental school. The following procedure was carried out in each case: (1) a suction aspirator was used to keep the wound as free as possible from salivary contamination; (2) an ample mucoperiosteal flap was raised; (3) the tooth was uncovered with the surgical bur running under a stream of water; (4) the tooth was either removed intact with elevators or divided into sections and removed; (5) the pericoronal sac and all bone particles were removed; (6) the cavity was filled with Chloresium Dental Ointment; (7) the wound was closed without wick or drain by interrupted Deknatel sutures.

Mandibular block anesthesia was used in all cases. The patients were all apparently in good health. Each was given a printed sheet with detailed postoperative instructions regarding hot mouth washes, diet, rest, analgesics and return visits. They were seen at four day intervals unless complications required more frequent care. At each visit the usual questioning and examination were done to determine amount of swelling, pain, trismus, odor, tenderness, bleeding and discoloration of face. These data, being subjective, are not reported here, as the sole objective of the study was to determine whether primary healing of the socket would occur under this management.

The results are shown in Table 1. A case was considered a failure if either of two occurrences ensued: (1) severe swelling with sealed in abscess of the operative site, or (2) a foul, putrid osteitis marked by severe pain. In either case the appropriate surgical measures were then instituted, such as reopening the wound for drainage, irrigation and loosely filling the bony wound with iodoform gauze saturated with Acrithesin Ointment.

Table 2 shows the postoperative day on which each failure case was so classified. It was assumed that wounds which

Table 2

Day on which each failure case was classified

Postoperative day	Number of cases
Third	1
Fifth	5
Sixth	1
Twenty-fourth	1
Total	8

did not require opening for drainage or insertion of obtundent gauze dressings were successful in achieving primary healing.

■ *Comment*

This series of cases is short for the obvious reason that it did not seem justified to submit further patients to a treatment regime with so high a percentage of unsatisfactory outcomes. It is uncontrolled, since there is no parallel series of cases treated exactly the same except for the insertion of Chloresium Dental Ointment. It has been the practice in this clinic to dress lower third molar impaction wounds with a short length of iodoform gauze saturated with Acrithesin Ointment. Under that regime, in a series of 180 consecutive cases studied in 1949 only 7 (3.9 per cent) ran a stormy course with foul odor, severe pain, or other major difficulty. While the group managed with gauze dressings required an average of three changes of the gauze at four day intervals for an average of 13.4 days under postoperative treatment, the relative freedom from pain and the greater certainty of healing are of considerable importance.

Criticism might be raised that the aseptic technic was poor in the Chloresium series, but in any event the same conditions prevailed in the larger series, treated so as to heal by granulation.

It is entirely possible that the chlorophyll factor in the ointment was of benefit but that difficulties arose from the vehicle. The use of chlorophyll solution used to moisten Gelfoam or fibrin foam would be worthy of trial.

■ *Summary*

1. Wounds resulting from removal of 24 completely unerupted lower third molars were filled with Chloresium Dental Ointment and sutured.

2. Eight sockets (33.33 per cent) resulted in painful osteitis or suppuration representing failure to secure healing by primary organization of the blood clot.

3. Chloresium Dental Ointment would appear unsuitable for use in lower third molar impaction wounds when primary healing is desired.

■ Cerebral Reception

So many of the disorders of sight and sound to which man is liable have their seat and origin in the purely mechanical parts of the apparatus, ear and eye, that we overlook the truth of cerebral visual and auditory reception, interpretation, and memory, but the fact remains that we see and hear with the brain.—*R. J. A. Berry, South African Dental Journal 23: Nov.-Dec. 1949.*

Ameloblastic odontoma:
report of case

■ *Harris Blake, D.D.S., and Fred S. Blake, D.D.S., Paterson, N.J.*

The most common tumors of the jaws are those which originate from the odontogenic structures. Their etiology may be associated with embryonic inclusions, infection or trauma. They may occur in either jaw, the most common locations being the molar and bicuspid regions, the ramus and the symphysis of the mandible. We report here a case of a soft odontoma, which is a growth made up of cells that form enamel, dentin and cementum.

REPORT OF CASE—A white girl, aged 17, was referred on February 9, 1949, for examination of a swelling of the buccal region and mucobuccal fold in the right mandibular region. The patient stated that four years previously a tooth had been extracted in that region, and, although she experienced no postoperative complications, "it never felt quite right." In October 1948, she noticed a slight swelling in the region of the lower right bicuspids, but since it caused no pain she did not seek treatment. Within the next few months the swelling increased in size until the patient finally sought advice from her dentist in February 1949. At that time an intraoral roentgenogram was taken.

EXAMINATION—The patient was well developed, cooperative, and in no acute distress. There was nothing unusual about her physical appearance except a mild exophthalmos. A recent examination by her physician showed her to be in good health. Family history and medical history were irrelevant.

Extraoral examination revealed a slight swelling along the body of the mandible. The skin covering the swelling was normal in appearance and texture, and there was no pain on pressure. Upon intraoral examination hygiene was found to be good. There was a swelling involving the right mandible extending from the first bicuspid to the first molar regions, and from the gingival crest to the mucobuccal fold. There was a slight redness of the mucous membrane over the swelling and the region yielded slightly on pressure. There was no fluctuation or crepitus. Palpation of the swelling elicited no pain. No fluid discharge or fistulas were evident. The second bicuspid showed considerable mobility and there was a space of 2 mm. between it and the first molar. No swelling was present on the lingual surface. The teeth and mucous membranes of the mouth appeared to be normal. Pulp test findings were normal.

ROENTGENOGRAPHIC EXAMINATION—Roentgenograms of the mandible showed a large oval radiolucent area extending from the distal aspect of the lower right cuspid to the lower right first molar, and from the crest of the ridge to the lower border of the mandible (Fig. 1). Loculations could be seen, especially near the

Adjunct oral surgeon, Barnert Memorial Hospital, Paterson, N. J.

Fellow in dentistry and anesthesia, Lincoln Hospital, New York.

crest of the ridge. The alveolar bone around the two bicuspids and mesial to the first molar was almost completely destroyed. The root of the second bicuspid was short and blunt. Complete intraoral and extraoral roentgenographic examination showed no lesions in any other part of the mouth.

LABORATORY EXAMINATION—The blood count and urine examinations were normal. The Wassermann reaction was negative. Blood chemistry for serum alkaline phosphatase was 4.8 units (Bodansky); serum inorganic phosphate was 4.4 mg.; serum calcium was 9.8 mg.

OPERATION—The patient was premedicated with 1½ grains of Seconal. Local anesthesia was obtained by mandibular and long buccal injections with 2 per cent procaine hydrochloride and epinephrine 1:50,000. A vertical incision was made at the cuspid and the buccal mucoperiosteal flap was reflected as far back as the second molar to expose the entire swelling. The first bicuspid, second bicuspid and first molar were extracted and the shell like buccal plate over the entire swelling was removed. This exposed the tumor which was completely stripped away from the bony walls. The resulting cavity was carefully inspected to make sure that all of the tumor tissue had been removed; the bony edges of the cavity were smoothed and all debris was removed. Sulfanilamide crystals were placed in the cavity and the flap was sutured in position. An iodoform gauze dressing was then inserted. At the conclusion of the operation the patient was given 300,000 units of procaine penicillin intramuscularly.

PATHOLOGIST'S REPORT—Margit Freund of the New York Institute of Clinical Oral Pathology reported that gross examination of the specimen showed several soft tissue fragments. Some were made up of a thin grayish, partly bluish tissue resembling cyst wall and measuring 1 to 2 mm. in thickness. The thickest portions had a glassy appearance. The other fragments aggregated to 30 by 20 by 8 mm. They were similar to the thickened portion of the cyst wall which was light buff, glassy and slightly nodular in appearance. They were soft and elastic in consistency. On section the cut surface was white and glassy.

Fig. 1.—Large oval radiolucent area extending from the distal aspect of the lower right cuspid to the lower right first molar, and from the crest of the ridge to the lower border of the mandible

Microscopic examination of a section through the solid portion showed a tumor, the stroma of which was loose, in areas almost myxomatous, and traversed by epithelial strands which greatly resembled dental anlage (Fig. 2, left). Frequently they showed budlike projections (Fig. 2, right). The strands and projections were made up of cuboid epithelium. In numerous areas the high epithelium surrounded a stroma which resembled stellate reticulum. The cells here greatly resembled ameloblasts. The cystic portion showed a connective tissue wall with a great deal of hemorrhage. It was lined with epithelium which resembled the epithelium described within the tumor. Frequently projections were made up of the same kind of tissue. In one area the wall showed hemorrhage and numerous foreign body giant cells.

Diagnosis was ameloblastic odontoma.

POSTOPERATIVE TREATMENT—The patient returned in 24 hours with slight swelling, but no appreciable pain. The dressing was changed and 300,000 units of penicillin was again ad-

ministered. The sutures were removed on the third postoperative day. Further treatment consisted of changing the dressing, irrigations and administration of 300,000 units of penicillin every 48 hours for a period of one week. The dressing was removed at the end of that time and the penicillin was discontinued. The treatment at home consisted of saline irrigations, high caloric diet and multivitamin therapy. The swelling completely subsided. A postoperative roentgenogram taken nine months after the operation shows almost complete regeneration of bone in the tumor cavity (Fig. 3).

COMMENT—This growth was a soft odontoma made up of structures which greatly resembled the dental anlage. In addition, the epithelial constituents started to proliferate and formed cells which resembled ameloblasts. Thus it was a combination of odontoma and ameloblastoma to which the name of ameloblastic odontoma or odonto-adamantoblastoma[1] is given.

The question of malignancy in such odontogenic tumors as the ameloblastomata, has been widely discussed. Some cases have been reported in which metastases have occurred. However, the ameloblastoma is essentially a benign, slow growing, expansive tumor. The tendency to recur may be attributed to the difficulty of complete removal.[2]

1. Thoma, Kurt H., *Oral Surgery*, St. Louis: The C. V. Mosby Company, 1948, vol. II, p. 1306.

2. Bernier, Joseph L., *A Manual for the Differential Diagnosis of Oral Lesions*, St. Louis: The C. V. Mosby Company, 1942, p. 178.

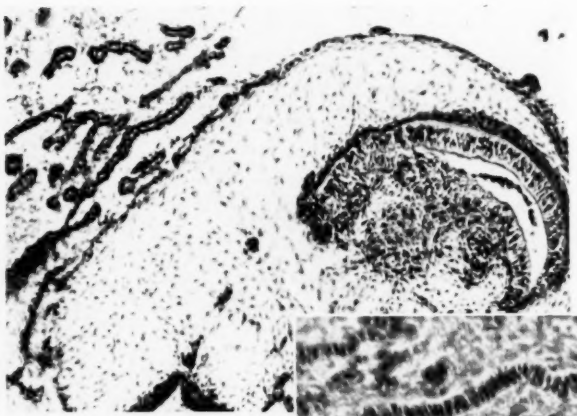
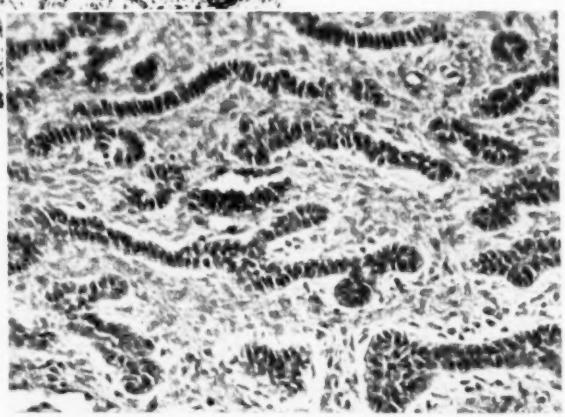


Fig. 2.—Left: Section through solid portion showed loose stroma traversed by epithelial strands which greatly resemble dental anlage



Right: The strands showed bud-like projections. The strands and projections were made up of cuboid epithelium

The treatment of all lesions is based upon an accurate diagnosis. Radical resection, while necessary in some instances, should be avoided if possible. Conservative excision has been advised with preservation of the continuity of the bone in order to avoid excessive deformity of the patient.

A preoperative examination of the roentgenogram led to the possibility that the condition was not a simple cyst. Experience with other cases of a similar nature should make one strongly suspicious of the nature of the condition, for the importance of early recognition of these lesions cannot be stressed too greatly. Not only should a thorough roentgenographic and clinical examination be made, but all tissue removed at the time of operation should be sectioned and examined microscopically.

Because of the age of the patient a conservative excision was preferred to radical resection. In view of the tendency of these cases to recur, the patient will be observed periodically for a long time. It is most important that recurrences be discovered early before they have destroyed the remaining parts of the jaw. —*17 Church Street.*

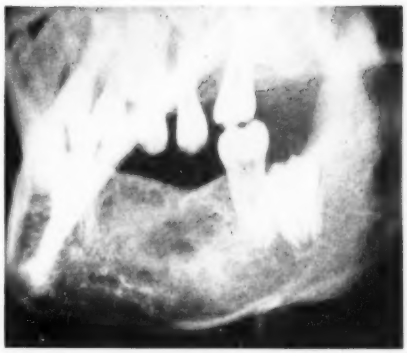


Fig. 3.—Shows almost complete regeneration of bone in the tumor cavity nine months after the operation

Hand-Schüller-Christian's disease: *report of case*

■ *Harold W. Krogh, D.D.S., Washington, D. C.*

The patient, a white man aged 54, was first seen June 14, 1943, in consultation with his dentist because of vague aches and pains in the region of the lower anterior teeth. All teeth were vital at this time and no cause could be ascribed for his symptoms.

He returned again in November with slightly aggravated symptoms. Clinical examination showed an area of passive congestion of the labial mucous membrane in the midline and a negative vitality response from both central incisors, although these teeth remained normal in color.

On September 5, 1944, the patient returned, complaining of tingling of the lower lip on the right side and pain in the lower right second bicuspid region. There was some swelling of the lip on this side owing to a lesion evidently from biting himself. On September 12, the lower right lateral incisor, cuspid and first bicuspid were found to be nonvital as well as the previously noted central incisors. On November 9, a peculiar yellowish coloration of

From the Research Foundation of Doctors' Hospital, Washington, D. C.

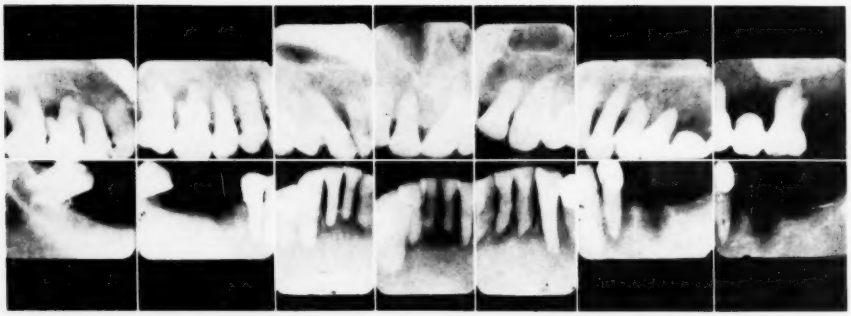


Fig. 1.—In November 1944, altered bony architecture was noted throughout the maxilla and mandible, with destruction of bone around many of the teeth

the mucous membrane could be seen in the lower right bicuspid region. Dental roentgenograms revealed an altered bony architecture throughout the maxilla and mandible with destruction of bone around many of the teeth (Fig. 1). Since his September visit a diagnosis of Paget's disease had been made elsewhere. During November the upper left molars and the upper right molar had been removed.

New dental roentgenograms were taken on December 15 and extraction was advised for the upper second bicuspids and all remaining lower teeth. Accordingly, on December 29 those teeth were removed under thiopental sodium anesthesia, and liberal portions of the affected bone were removed for histologic study.

The postoperative course was uneventful.

Material for microscopic study was sent to Colonel James E. Ash at the Armed Forces Institute of Pathology, who diagnosed the condition as xanthomatosis (Fig. 2).

A slide was sent to Dr. A. C. Broders at the Mayo Clinic. His report was "Chronic inflammatory tissue with numerous foam cells and

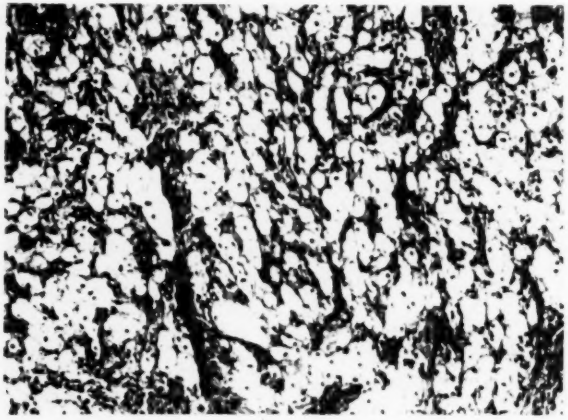


Fig. 2.—Collection of lipoid histiocytes with considerable cellular stroma. Xanthomatosis consistent with the findings in Hand-Schuller-Christian's disease

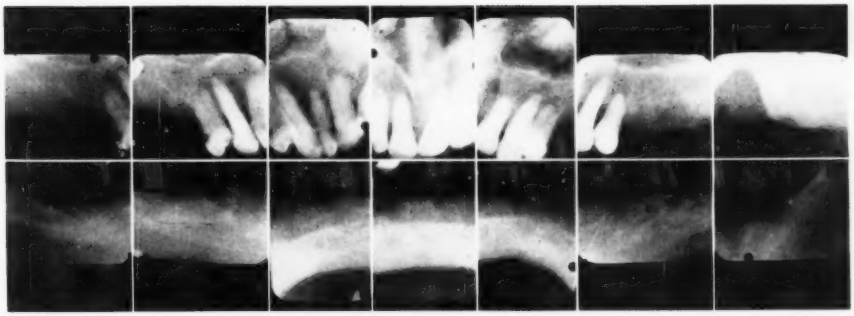


Fig. 3.—In April 1945 there were irregular regions of destruction in the maxilla and mandible

an occasional foreign body giant cell. These findings could represent Hand-Schüller-Christian's disease or some disturbance of the lipoid metabolism."

Dr. Carl V. Weller, University of Michigan, also examined a slide and reported "Fat stain on frozen section is compatible with interpretation as Hand-Schüller-Christian's disease. Stainable lipoids are found also in a form of 'essential lipoid histiocytosis' in which fascia and supporting tissue generally may be involved without the clinical picture of Hand-Schüller-Christian's disease."

Blood chemistry findings were more or less within normal limits and there was some increase in the cholesterol.

Following the histologic interpretation the patient was referred for roentgen treatment since that is the only method of treatment which has been found to be of benefit.

For a number of years the patient suffered from severe pains in the leg. The pains originated in the middle third of the thigh and extended to the middle third of the lower leg. In December, he noticed pains in the left shoulder which extended down to the hand.

From January 5 to January 10, 1945, the patient was given 400 r with 220 kv., 0.5 mm.

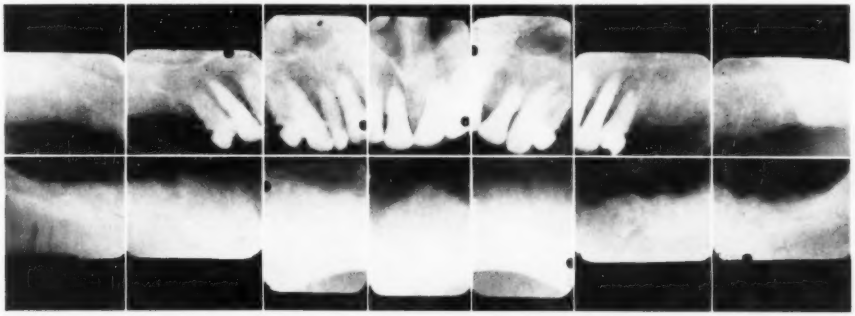


Fig. 4.—In December 1945, roentgenograms showed a more uniform appearance throughout the maxilla and mandible, which indicated improvement. No new regions of destruction were noted

copper filter at 50 cm. skin target distance, over the left shoulder which brought relief.

In April the patient complained of a painful soft tissue swelling over the posterior aspect of the left elbow. Examination revealed a small, palpable, freely movable nodule on the palmar and medial aspects of the forearm just below the elbow. Roentgenograms of the jaws and skull were made at this time. There were irregular regions of destruction throughout the mandible and maxilla (Fig. 3). Roentgenograms of the skull showed no definite involvement.

Treatment consisted of 864 r with 140 kv., 3 mm. aluminum filter at 25 cm. skin target distance over the left elbow, and 600 r with 220 kv., 3 mm. aluminum filter at 25 cm. skin target distance over each side of the maxilla and mandible.

The patient reported slight improvement in the jaws and elbow. He was examined in June, at which time there was some improvement in the bones of the mandible. The pain in the shoulder and arm was completely gone. However, there was slight tissue swelling and pain in the upper portion of the right leg. Roentgen treatment was administered.

In July the patient reported all pain had disappeared. His only complaint was a feeling of numbness in his lips. He was examined periodically, and continued to improve.

Roentgenograms, made on December 20, 1945, showed a more uniform appearance throughout the mandible and maxilla than was noted at any previous time, which indicated improvement (Fig. 4). No new regions of destruction were noted.

When the patient was last seen, in July 1946, he was having no trouble. The mucous membranes appeared normal. His only complaint was continued numbness in the region of the chin. This condition was present in the early stages of the disease. It got no worse, but it failed to improve.—*1835 Eye Street, N. W.*

A follicular cyst:
report of case

■ *Arthur M. Maris, D.D.S., Des Moines, Ia.*

On March 1, 1946, a boy, aged 11, was referred because of a deformity of the left side of his lower jaw. His father stated that the family had become aware of an enlargement of the jaw seven months previously. Gradually it had grown larger. Roentgenograms were made at a local hospital a week before, and a diagnosis of "cyst" had been made.

On examination the body of the mandible on the left was found to be almost three times as wide as on the right, with normal mucosa over the enlargement (Fig. 1). A lateral roentgenogram showed a well defined cavity with the lower second bicuspid situated in the lingual plate with the crown toward the buccal side (Fig. 2).

A diagnosis of follicular cyst, dentigerous type, was made and operation advised.

On March 22, 1946, the patient was admitted to the hospital for operation. Premedication was 1½ grains pentobarbital. Anesthesia was obtained by inferior alveolar and long

Fig. 1.—Photograph taken on March 1, 1946, to show expansion of buccal plate.

Fig. 2.—Above, left: Lateral jaw roentgenogram showing extensive cyst arising from an unerupted second bicuspid. Other roentgenograms show size and expansion of cyst.

buccal nerve block with 4 cc. of 2 per cent procaine-epinephrine. This was supplemented by a 2 cc. 2 per cent procaine-epinephrine infiltration through the skin just inferior to the cyst.

A gingival incision was made extending

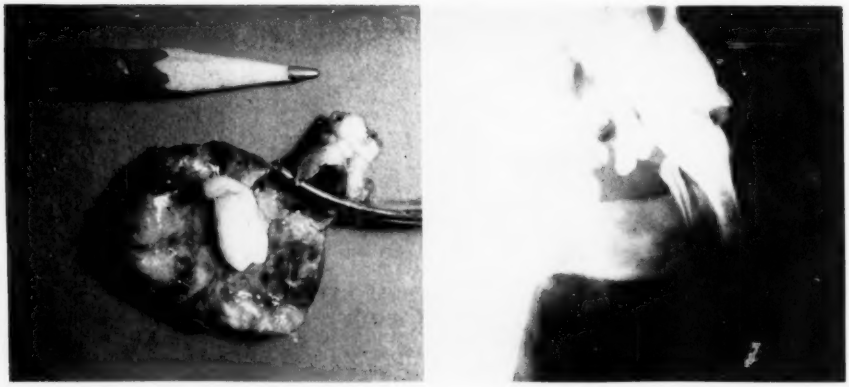


Fig. 3.—Left: Cyst wall and second bicuspid were removed with the deciduous second molar. Right: Roentgenogram of the left mandible on September 4, 1946, showing good bone regeneration

from the left cuspid region, involving the lower left first bicuspid, deciduous second molar, and permanent first molar teeth, flaring it out well at each end. The mucoperiosteal flap was elevated and retracted widely. The bone over the bulge was perforated by a series of semicircular holes with a surgical bur under constant sterile water irrigation. The holes were connected with crosscutting fissure burs, care being taken not to perforate the cyst wall. Then the cyst wall was carefully enucleated to the attachment at the neck of the lower second bicuspid. The lower first bicuspid and first molar were removed after sufficient bone was cut away. The molar was sectioned in order to remove it with as little force as possible. The cyst wall and second bicuspid were removed with the deciduous second molar. (Fig. 3, left). The ends of the incision were sutured but the central portion was left open for placement of an iodoform gauze dressing. Surgical dressing was incorporated in the upper portion of the gauze so that it would seal the wound from saliva and food.

The dressing was changed on the third postoperative day. On the fifth postoperative day, the patient was discharged. He returned every third day to have the dressing changed.

On the nineteenth postoperative day the last dressing was removed. The bone was well covered with healthy granulation tissue. The wound was irrigated daily by the patient's mother.

Inasmuch as this cyst may have been partially caused by failure of the deciduous molar to exfoliate normally, not allowing eruption of the bicuspid, it was felt that all the remaining deciduous teeth should be extracted. On July 8, 1946, the deciduous upper right cuspid, first and second molars and permanent first molar, which was abscessed, were extracted. On July 15, 1946, the deciduous upper left cuspid and first molar and the roots of the permanent first molar were extracted. The deciduous lower right first molar was removed on September 4, 1946.

A roentgenogram of the left side of the mandible on September 4, 1946, showed good bone regeneration where the cyst had been removed (Fig. 3, right).—*916 Equitable Building.*

It is possible that extraction of the deciduous molar and creation of a large permanent opening into the cyst might finally have resulted in normal eruption of the involved bicuspid with no sacrifice of permanent tooth structure. I have an identical case that demonstrates the value of this method; that is, the Partsch principle.—Editor.

Equitable organization of hospital oral surgery departments

THE RECENT REORGANIZATION of the oral surgery staff in Emergency Hospital, Washington, D. C., is an example of progressive, cooperative effort. It provides an equitable organization of the hospital oral surgery department which might well be followed by other communities.

Arrangements of this sort have frequently been difficult to achieve, partly because the dental profession has not been encouraged to use the hospitals for the improvement of its services and the benefit of the community.

The great public esteem which the medical profession enjoys results from the physician's close association with hospitals and the general belief that all members of the profession contribute their services to charity. The whole system of medical teaching is based on charity service, and it would collapse or be drastically altered without it.

The dental profession would do well to emulate medicine by contributing its particular skills to the hospitals, and thus further discharge its social obligations while utilizing opportunities for teaching and learning. The members of the American Society of Oral Surgeons should take the lead in organizing and maintaining adequate hospital oral surgery departments.

Difficulties in the way of an ideal organization have also arisen when, as has sometimes happened, the chief of the oral surgery department has manifested an unwillingness to admit competent and well trained men to staff membership. Medical staffs, too, have been slow to understand the desirability of increasing the number of staff positions for the dental department. The result has been denial of hospital appointments to many qualified oral surgeons. The consequent inadequacy of teaching facilities for young men planning to enter the practice of oral surgery and the loss of professional service to the hospital itself constitute a needless waste.

A small closed oral surgery staff is detrimental to the best interests of oral surgery. In particular it hinders the growth of experience of the young members in the field by

limiting the training of interns and residents. It is time for oral surgeons to open their staffs to qualified men and take a more active interest in the training of those who wish to enter the specialty of oral surgery.

When the oral surgery staff in Emergency Hospital was reorganized, all oral surgeons in the community who were members of the American Society of Oral Surgeons or who had similar qualifications were invited to attend an organization meeting and were offered appointments to the staff. The twelve who accepted were given equal hospital status—consultant in oral surgery. Since the number involved posed an unworkable administrative problem for the hospital, the consultants elected an executive to hold office for one year only. The elected executive represents the oral surgeons on the general hospital staff and directs intern and resident training.

Each consultant, in rotation, has one month of service. During this month he is called for private cases and for house cases which are beyond the capabilities of the house or visiting staff. During the time he serves as consultant he permits the interns to spend two half days a week in his office observing all phases of his private practice.

The visiting staff is on duty during dispensary hours. Members of this group see new and problem patients with the intern and advise or assist him in diagnosis or surgery. However, the teaching of surgical technic is entirely the function of the consulting staff. Each member of the visiting staff serves one day a week, and those with adequate qualifications are advanced to the consulting staff when vacancies occur.

The intern attends staff meetings, makes medical and surgical ward rounds and attends meetings of the local dental society. He obtains training in laboratory procedures and spends considerable time in the x ray department. He is given an opportunity to learn to administer general anesthetic agents and to assist with operations of interest to oral surgeons. Since he lives in the hospital, he has the priceless experience of being part of an intimate medical community, and of learning the language and thinking of the medical profession.

This type of training program or one equally effective is recommended for every community. The public long since has learned the relationship of dental to general health and the importance of modern scientific oral surgery. At least one hospital in each community should be equipped to furnish the necessary training to dental interns and the necessary oral surgery service to the community. The American Society of Oral Surgeons should assume its full share of responsibility in the establishment of such training and service programs.—*Harold W. Krogh.*

VOLUME 9 • JULY 1951 • NUMBER 3 SURGICAL ORAL PATHOLOGY

Carotid body tumors

■ *Joseph L. Bernier, D.D.S., M.S., and Richard W. Eweke, D.D.S., M.S., Washington, D.C.*

The carotid body is a chemoreceptor, susceptible to changes in the gaseous composition of blood and from which nerve impulses are sent to the respiratory center to modify the rate and depth of respiration. Its presence is essential in severe anoxia but contributes little in the normal physiologic process of man. Anatomically the carotid body is situated in a close but slightly variable relationship to the bifurcation of the common carotid artery adjacent to the carotid sinus. Frequently it lies deep in the bifurcation and is sometimes wedged between the roots of the internal and external carotid arteries.

Carotid body tumors are relatively rare, only about 300 cases having been reported to date. They are usually symptomless and of several years' duration when detected. Approximately 15 per cent of all carotid body tumors are malignant although they seldom produce distant metastases.[1] Recurrence is not uncommon if the tumor is incompletely removed.

While surgical intervention is the treatment of choice, this procedure sometimes is impossible, particularly when the tumor surrounds the vessels or fuses with them. Under such circumstances the mortality rate is high. Phelps, Case and Snyder[2] reported 24 per cent mortality in 148 patients treated by operation. If the common carotid is ligated it is possible that 30 to 65 per cent of the cases will terminate fatally and half of the surviving patients will show permanent brain damage.[3] Bevan and McCarthy[1] are of the opinion that surgical intervention should not be attempted if it is necessary to ligate the common carotid in order to complete the operation. Harrington and others[3] recommended preoperative systemic compression of the common carotid several times a day for a few weeks with the hope of developing collateral circulation to the brain. Lahey and Warren[4] agree with this and believe that the patient should be able to tolerate complete compression for a period of 10 minutes a day without symptoms. They also state that if the internal and external carotid arteries are ligated the internal jugular vein should also be ligated.

Because of the technical hazards Keen and Funke[5] feel that if the symptoms and inconveniences are slight it is best not to subject the patient to surgical procedures. The reported results following treatment with radiation therapy are variable.

A clinical diagnosis of carotid body tumor

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Major (D.C.) U.S. Army, Army Medical Center; resident, Oral Pathology, Armed Forces Institute of Pathology, Washington, D.C.

1. Bevan, A. D., and McCarthy, E. R., Tumors of Carotid Body. *Surg., Gynec. & Obst.* 49:764 (Dec.) 1929.

2. Phelps, F. W., Case, S. W., and Snyder, G. A. C., Primary Tumors of the Carotid Body; Review of 159 Histologically Verified Cases; Report of Case. *West. J. Surg.* 45:42 (Jan.) 1937.

3. Harrington, S. W., Clagett, O. T., and Dockerty, M. B., Tumors of Carotid Body. Clinical and Pathologic Considerations of 20 Tumors Affecting 19 Patients (One Bilateral). *Ann. Surg.* 114:820 (Nov.) 1941.

4. Lahey, F. H., and Warren, K. W., Tumors of Carotid Body. *Surg., Gynec. & Obst.* 85:281 (Sept.) 1947.

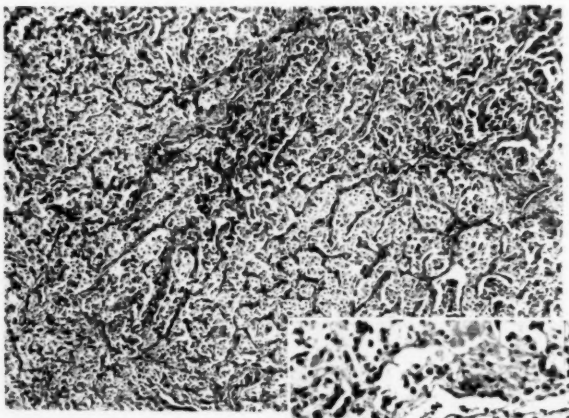
5. Keen, W. W., and Funke, J., Tumors of the Carotid Gland. *J.A.M.A.* 47:469 (Aug. 18) 1906.

is seldom made since the lesion is usually symptomless unless it presses against the vagus, cervical sympathetic, or recurrent laryngeal nerves. When present the symptoms are usually headache, dizziness, hoarseness, cough, dysphagia or fainting, singly or in combination.

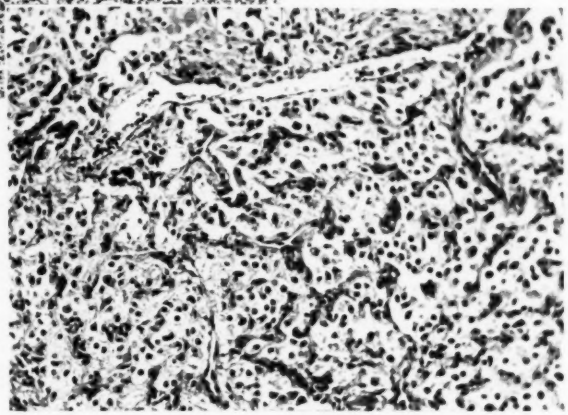
These tumors must be differentiated from metastatic lesions as well as other lesions common to this region, such as the neurofibroma, branchial cysts, aberrant thryoid and aneurysms. If aneurysm is ruled out, a biopsy is the only means possible of making a differential diagnosis. It may also give a clue as to the operability and prognosis of the tumor. No age group is exempt although persons between 40 and 60 years of age are more often affected. Males and females are affected equally and tumors seem to occur with equal frequency in either side of the neck.

Clinically it is occasionally noted that because of their vascularity they can be compressed and temporarily reduced in size. Further they are deep seated and never attached to the skin. There is usually some lateral mobility but because of the attachment to the carotid vessels they have little or no vertical mobility. Pulsation may be felt but not the full expansion and contraction of an aneurysm.

The patient in this case was a 60 year old white female for whom a thyroidectomy had been performed about three years before admission. She had returned with a progressively enlarging mass in the left side of the neck at the level of the thyroid cartilage and medial to the



Left: The tumor is rich in cells which are separated into groups by a framework of collagenous fibers and connective tissue fibers. (Magnification × 75)



Right: The cells appear round with ovoid nuclei. A delicate chromatin network is seen in the cytoplasm. Some vascular channels are noted. (Magnification × 210)

sternocleidomastoid muscle. Symptoms of dizziness, headache and cough were presumed to be due to pressure. Her blood pressure was 140/80. Other findings were normal.

At operation a soft tumor mass was revealed, the capsule of which appeared fused with the carotid sheath. When the sheath was opened the tumor was found to be attached by a pedicle to the crotch of the bifurcation of the common carotid artery. It was carefully freed from the surrounding structure by blunt and sharp dissection. The pedicle was doubly clasped, cut and ligated, and the tumor was removed in its entirety.

The patient made an uneventful recovery and was discharged two weeks later.

Grossly the specimen consisted of a moderately firm mass of tissue measuring 5 by 3 by 2 cm. and weighing 11 Gm. The outer surface was smooth and lobulated in some areas. The cut surface was pinkish-brown, beefy and fairly homogeneous.

Microscopically, the tumor was composed of large eosinophilic cells with granular cytoplasm and large, generally round, vesicular nuclei. These cells varied in shape and size. In some areas the cytoplasm was vacuolated almost to the point of being clear. The cells were arranged in clumps separated by thin fibrous tissue strands to produce a glandular and almost an acinar pattern. The tumor was extremely vascular (illustration).

Pemphigus

■ *Joseph L. Bernier, D.D.S., M.S., and Richard W. Tiecke, D.D.S., M.S., Washington, D.C.*

Pemphigus, a disease in which bullae occur on skin and oral mucosa, may appear in one of several forms, one of which is manifest in a chronic and an acute phase. Some investigators believe that oral lesions are present in a high percentage of the cases and that possibly the mucosal lesions are primary and those on skin are terminal manifestations of the disease. In their study of 100 cases Combes and Canizares[1] found the earliest lesion to be on the buccal mucosa in 36 cases. In 74 of 80 patients the mucous membrane was eventually affected.

The diagnosis of pemphigus from its oral manifestations is difficult since little authoritative information as to these symptoms is available. Matis,[2] Stern and Colby,[3] Lever,[4] Ormsby and Montgomery,[5] Cahn,[6] and Combes and Canizares[1] are a few who have contributed to the literature, and their writings seem to indicate the difficulty encountered in making a diagnosis by oral symptoms.

Several types of pemphigus are recognized: pemphigus vulgaris, the most common form, which is subdivided into an acute malignant type and a chronic benign type; pemphigus vegetans; pemphigus conjunctivae; pemphigus erythematoides; pemphigus foliaceus. In the latter two, oral lesions are rather uncommon. Thoma[7] describes four forms: acute vulgaris which is usually malignant; chronic vulgaris which is benign; vegetans; conjunctivae. Folia-

1. Combes, F. C., and Canizares, O., Pemphigus Vulgaris. *Arch. Dermat. & Syph.* **62**:786 (Dec.) 1950.
2. Matis, E. L., Pemphigus Localized in the Mouth. *Ann. Otol., Rhin. & Laryng.* **49**:991 (Dec.) 1940.
3. Stern, L., and Colby, I. S., The Stomatitis of Acute Pemphigus Vulgaris. *Ann. Dent.* **1**:199 (March) 1943.
4. Lever, W. F., Oral Lesions in Pemphigus. *Am. J. Orthodont. (Oral Surg. Sect.)* **28**:569 (Oct.) 1942.
5. Ormsby, O. S., and Montgomery, H., *Diseases of the Skin*, ed. 6. Philadelphia: Lea and Febiger, 1943, p. 405-425.
6. Cahn, L., Pemphigus. *Am. J. Orthodont. (Oral Surg. Sect.)* **33**:541 (July) 1947.
7. Thoma, Kurt H., *Oral Pathology*, ed. 3. St. Louis: The C. V. Mosby Company, 1950, p. 1216-1221.

ceous and erythematoid types are also mentioned.

In acute pemphigus vulgaris the bullae are 1 to 10 cm. in diameter and may develop in cycles or in succession. When they collapse a yellow membrane remains which covers a raw surface. The face, trunk and limbs are frequent sites of the lesions. Mortality is high with 56 of the 100 cases reported by Combes and Canizares[1] terminating fatally. Although nearly all of these were classified as pemphigus vulgaris no distinction was made as to whether they were acute or chronic.

The oral mucous membrane is involved in a high percentage of cases and large areas may be denuded. Because of the sore mouth, mastication and swallowing become extremely painful, and the patient may literally starve. The average interval between the time the oral lesions are noticed and the time cutaneous lesions form is usually less than three months.

In chronic pemphigus vulgaris the bullae are more tense and do not break so easily. There is also more tendency towards healing. The disease may last for years or completely heal after a few months. The mortality is much lower in the chronic form than in the acute.

Pemphigus vegetans resembles acute pemphigus vulgaris clinically with the exception that vegetations form secondarily on the erosions. The prognosis is somewhat better than in acute pemphigus vulgaris but less encouraging than in the chronic type.

In pemphigus conjunctivae the skin is involved in about half of the cases and there is a tendency for the blisters to heal.

In general the lesions in any type of pemphigus are seldom distinct since rupture usually occurs before the case is seen. Stern and Thoma both feel it is not possible to diagnose the form of pemphigus by the character of the mucosal lesions alone. Chronic remittant mouth lesions which fail to heal should arouse suspicion. An elevated eosinophilic count and Nikolsky's sign may suggest the diagnosis of pemphigus. Biopsy of an intact lesion may be of value. Histologically the lesion is characterized by the absence of inflammatory elements in either the fluid or the tissue and by absence of dilated vessels in the surrounding tissue.[1]

Several conditions may simulate pemphigus. These are drug reactions, herpetiform dermatitis, erythema multiforme and contact allergy.

Drug reactions may be ruled out by obtaining a complete history from the patient or by removal of all medication for several weeks. If the lesions disappear and then reappear upon re-administration of the drugs, pemphigus need not be considered.

Herpetiform dermatitis nearly always shows cutaneous as well as mucosal lesions. Furthermore, the lesions show a tendency to heal without immediate recurrence.

Erythema multiforme may be differentiated by its localization to one part of the body, its seasonal occurrence and duration.

Contact dermatitis may be investigated by patch tests which are fairly accurate.

There is no specific treatment. All the new drugs including the sulfonamides and cortisone have been tried without permanent success,[1] although some may afford temporary relief. Arsenic is still superior to the newer drugs for many patients. Combes and Canizares[1] feel that carbarsone is the most satisfactory drug to use.

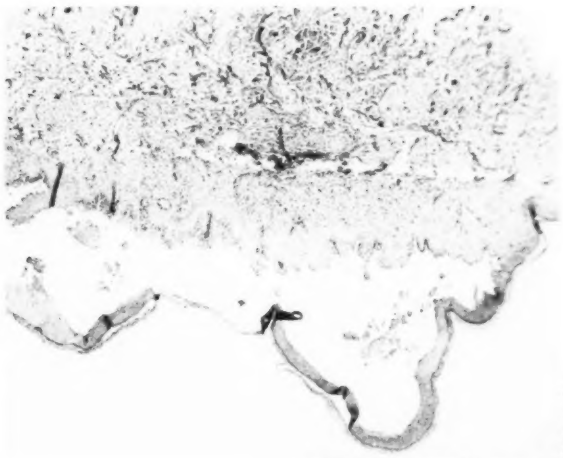
Local treatment includes baths of various solutions. Potassium permanganate is one of the more prominent. Many types of wet dressings are of benefit. Burow's solution is suggested by Combes and Canizares.[1]

General supportive treatment includes crude liver extract, hydrochloric acid, vitamins, protein hydrolysates and ferrous sulfate.

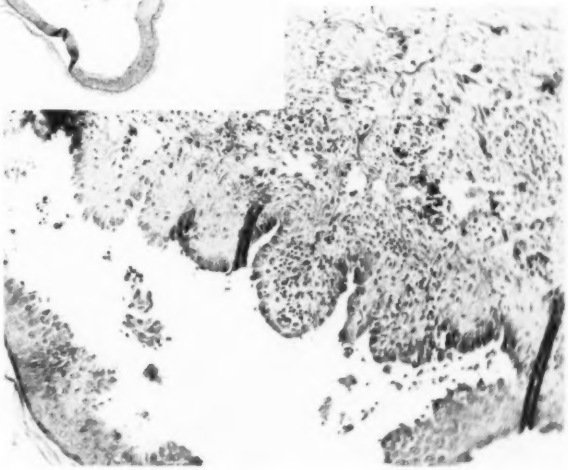
Specific drugs that may be employed are bismuth arsphenamine sulfonate (Bismarsen), carbarsone, sulfonamides, penicillin, streptomycin, adrenocorticotropic hormone and cortisone.

The patient in the case to be reported was a 35 year old white male who gave a history of a few large bullae on the skin for over two years and with the recent development of generalized large bullae on the back, legs, feet and in the mouth. They appeared on normal skin with no surrounding erythema, and on the soft palate as small blisters. These were accompanied by headache and fatigue.

Examination of the oral mucosa revealed a white-brown membrane thought to be a



Left: Intact bulla is seen here. Little inflammation is present. Some debris is noted within the bulla. (Magnification × 48)



Right: Note basal layer of epithelial cells forming lower boundary of bleb. Upper wall is also of epithelium. Some keratin is seen on the surface. (Magnification × 160)

broken bullae. This area was painful to touch, and the membrane when pulled away revealed a raw inflamed surface beneath.

Biopsy of one skin lesion showed an intact bulla (illustration, left).

Histologically, the outstanding feature was an intradermal bleb of considerable size located in the stratum malpighii which had expanded upwards leaving the basal layer of cells intact. Although the fluid contents of the bulla had escaped, a number of epithelial cells were seen together with a small amount of fibrin in one area which did contain a few polymorphonuclear leukocytes. An occasional eosinophilic leukocyte along with a few blood cells was also noted.

There was a slight perivascular lymphatic infiltration in the corium. The surface epithelium was covered by a thin layer of keratin (illustration, right).

Sarcoidosis

■ *Joseph L. Bernier, D.D.S., M.S., and Richard W. Tiecke, D.D.S., M.S., Washington, D.C.*

Sarcoidosis was defined at the Conference on Sarcoid, held under the auspices of the National Research Council in 1948, as being "characterized by the presence in any organ or tissue of epithelioid cell tubercles with inconspicuous or no necrosis and by the frequent presence of refractile or apparently calcified bodies in the giant cells of the tubercles. The characteristic lesions may be replaced by fibrosis, hyalinization or both. Clinically, the lesions may be widely disseminated. The tissues most frequently involved are lymph nodes, lungs, skin, eyes and bones, particularly the bones of the extremities. The course usually is chronic with minimal or no constitutional symptoms; however, there may be acute phases characterized by a general reaction with malaise and fever. There may be signs and symptoms referable to particular tissues and organs as they become involved."[1]

The symptoms seem to consist of enlarged lymph nodes, cough, weight loss, low grade fever, malaise and weakness. A negative tuberculin test can be of considerable help in the diagnosis, but a positive reaction does not rule out the disease.

"There may be clinical recovery with radiographic evidence of residue, or impairment of function or organs involved, or a continued chronic course of the disease."[1]

Usually the disease lasts for months or years and is almost never fatal. Ricker and Clark[1] found a 1.3 mortality rate in their series of cases. Healed tubercles, as in tuberculosis, are represented by scars.

The lesions appear as rounded, well circumscribed masses resembling miliary tubercles made up of epithelioid cells with a scattering of macrophages, giant cells of the Langhans' type or foreign body type and an occasional eosinophilic leukocyte. The lesions appear to be more sharply defined than those seen in tuberculosis, and the granulomas tend to occur in clusters all of about the same stage of development. The giant cells in sarcoidosis are larger and contain more nuclei than those seen in tuberculosis, and most striking is the absence of caseation.

The etiology is unknown although it is thought by some to be an atypical manifestation of tuberculosis.

From the report of Ricker and Clark[1] and of Michael, Cole, Beeson and Olson[2] of 350 cases of sarcoidosis in the Armed Forces it was noted that a large group were from the southeastern region of the United States. They also noted that most of these people were born in rural areas and that the incidence was considerably higher among negroes.

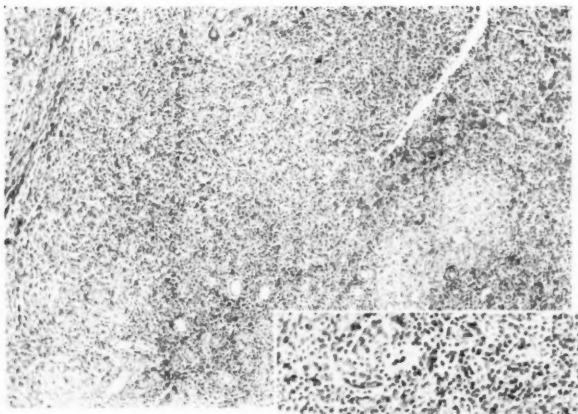
The patient in this case was a 21 year old white male. He complained of gradual weight loss, fatigue, and pain in the region of his right ear. There was a gradual enlargement in the right parotid region over a period of about two months. Roentgenograms of the chest were negative for tuberculosis and clinical symptoms were absent. Sputum examination failed to reveal any *Mycobacterium tuberculosis* and blood counts were normal. Tissue was removed from the parotid enlargement.

Grossly the specimen consisted of 2 large irregular masses. There were numerous small, budlike sprouts extending from the larger central lobulated mass. On sectioning the lesion was firm and of a homogeneous gray color. No areas of caseation were identified.

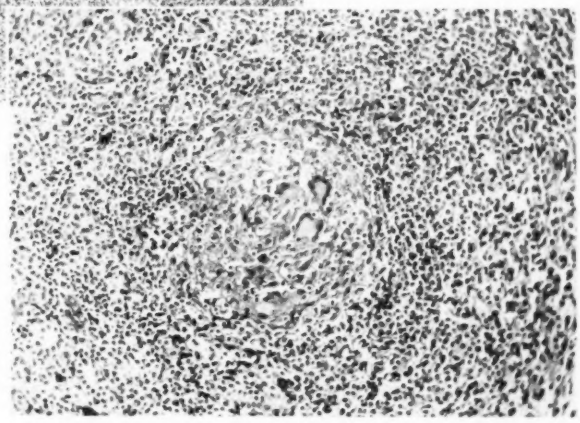
Microscopically, sections of the gland displayed a parenchyma which was almost com-

1. Ricker, W., and Clark, M., Sarcoidosis, A Clinicopathologic Review of 300 Cases, Including 22 Autopsies, *Am. J. Clin. Path.* 19:725 (Aug.) 1949.

2. Michael, Max, Jr., Cole, Roger M., Beeson, Paul B., and Olson, Byron J., Sarcoidosis, *Am. Rev. Tuberc.* 62:403 (Oct.) 1950.



Left: Several tubercles are seen on this low power photomicrograph. All seem to be at the same stage of development. (Magnification × 75)



Right: Langhans' type giant cells are seen in the tubercle here. Note the epithelioid cells forming the tubercle in contrast to the surrounding connective tissue cells and lymphocytes. (Magnification × 160)

pletely replaced by rounded masses of epithelioid cells arranged in tubercles (illustration, left). Several of these structures show small areas of slight central necrosis. Numerous giant cells were present (illustration, right). No asteroid bodies or stellate inclusions could be identified in the giant cells. There was almost total replacement of the glandular tissue by granuloma. Some chronic inflammatory reaction was noted. Ziehl-Neelsen stain failed to reveal the presence of acid-fast organisms in the section examined.

■ Combination of Antibiotics

Q.—In the management of refractory infections is there any advantage in combining penicillin with other antibiotics such as aureomycin, Chloromycetin, or terramycin?

A.—On the contrary, definite incompatibility exists between penicillin and antibiotics of this group. No incompatibility seems to exist with penicillin and streptomycin but the latter is seldom indicated in most infections of the mouth and jaws. Good principles in using antibiotics are to strike fast and hard, giving high therapeutic dosages. If there has been no favorable clinical response after 48 hours the type of antibiotic may then be changed. A knowledge of the type of organism and its antibiotic sensitivity is extremely helpful in infection management.

■ ACTH and Oral Surgery

Q.—What significance has the administration of ACTH and related new hormonal therapy to minor oral surgery?

A.—The complete activity and side reactions of these compounds are not fully understood and any answer would be premature and carry with it implied reservations. However, in view of the reported delay in fibroblastic proliferation and retarded healing produced by these drugs it would appear logical to postpone all elective surgery until several weeks after they have been discontinued. This may prove to be only academic but must be recognized for the present. Repair of sockets demands full efforts of regeneration and repair. In a small series of emergency extractions during or shortly after concurrent ACTH administration no complications occurred. Patients receiving this hormonal treatment are vulnerable to severe infection without its usual clinical manifestations and the oral field may be the source of such infection. For this reason correlated antibiotics are given in the management of these patients to combat such masked infection. Further research will help us to see the implications of these drugs to our field.

■ Distoangular Impactions

Q.—The distoangular impacted third molar often presents a greater problem in removal than any other impactions in my practice. Have you any suggestions in technic?

A.—This position of fully impacted mandibular third molars presents mechanical problems which seem refractory to usual instrumentation. Some operators suggest that after the distal portion of the crown or the posterior locking bone have been removed the tooth may be engaged by a notch and tapped upward and backward out of the socket with a chisel. If one elects to remove the crown of the tooth the plane of section should provide enough height on the mesial for effective application of elevators.

■ Multiple Extractions in Postrheumatic Fever Cases

Q.—In the treatment of patients with a history of rheumatic fever and residual cardiac valve damage, when the precaution of antibiotic premedication has been properly given, should more than one tooth be removed at a time?

A.—The protection afforded by antibiotics in adequate dosage to prevent the harmful effects

of bacteremia has prevented serious complications for these patients. Since there is a relationship between infection and the number of bacteria present, the magnitude of a transient bacteremia during extractions must be considered. While it is hoped that the antibiotic blood level is sufficient to combat all these showers of bacteria, some respect for the local conditions in the region of extractions is warranted. If all the teeth in question are grossly involved by chronic infection, it would be logical to limit the field of intervention. If there are only a few areas of related infection the multiple extractions would probably not invite bacteremia complications.

■ Ameloblastoma in Cyst Wall

Q.—A recent dentigerous cyst which we removed was reported by the pathologist to contain "areas of ameloblastoma with the cyst wall." Is further treatment necessary?

A.—It is not uncommon to receive this diagnosis on odontogenic cyst specimens. The epithelial potential for ameloblastic change is always present in this region of the body. If the cyst was completely enucleated and the ameloblastic elements were confined to the wall there is no need for further intervention and the prognosis is good.

■ Cellulitis and Stafolithiasis (Salivary Calculus)

Q.—We were recently confronted with a problem of massive swelling from combined submaxillary duct obstruction by a posteriorly lodged calculus and severe cellulitis from a secondary infection. What would be the proper course of treatment?

A.—Such a clinical picture is not uncommon and often the surgical intervention for removal of the calculus is made both difficult and hazardous by the associated cellulitis. Control of the cellulitis by antibiotics and hot intraoral irrigations should precede the removal of all but the most superficial calculi in such a situation. Mild irradiation may reduce obstruction symptoms as a means of temporary relief before surgical intervention.

■ Swollen Neck Glands and Herpetic Ulcers

Q.—Two weeks ago a patient came in with a generalized swelling of lymph glands, fever and feeling ill. There were severely inflamed gums, tongue and "cold sores" on the lips. The mouth condition did not improve with penicillin or local treatment for Vincent's infection. In about a week the mouth condition gradually improved as the patient began to feel better. Was this some form of definite infection?

A.—The symptoms strongly suggest a combination of infectious mononucleosis and herpetic stomatitis. These conditions are associated frequently. Infectious mononucleosis lowers the resistance of oral tissues for secondary invasion by herpetic virus infection. Both conditions have a rather self limiting course of about two weeks. Differential counts and special blood studies will aid in diagnosis of infectious mononucleosis. Aureomycin will abort or attenuate the course of the herpetic stomatitis.

■ Incidence of Mixed Tumors

Q.—How rare is a mixed tumor of the palate?

A.—Oncologists report that mixed tumors in general constitute about 2 per cent of all tumors of the head region. Although they have a tendency to recur when incompletely removed, the majority of mixed tumors are benign. Variants of the mixed tumor degenerate into malignant adenocarcinoma. Mixed tumors are most commonly located in the parotid gland but are also seen in other salivary glands and in the palate and lips.

■ THE NATIONAL FORMULARY, NINTH EDITION. Prepared by the Committee on National Formulary under the supervision of the Council by authority of the American Pharmaceutical Association. 917 pages. Index. Price $8. Washington, D.C.: American Pharmaceutical Association, 1950.

The *National Formulary* and the *U. S. Pharmacopeia*, which are revised completely every five years, are legal standards for drugs. They include detailed chemical and pharmaceutical specifications for most of the drugs generally prescribed in this country. However, they do not include statements of actions and uses.

The ninth edition of the *National Formulary* became official on November 1, 1950. Among the articles new in this edition are camphorated parachlorophenol, potassium mercuric iodide, rutin, and thimerosal (Merthiolate®).

The following items were omitted from the new edition: compound acetylsalicylic acid paste, aconite and chloroform liniment, dichloramine T, iodine and zinc iodide glycerite (diluted Talbot's solution), phenolated iodine solution (Boulton's solution), papain, chlorinated paraffin, camphorated phenol and phenol glycerite.

The changes indicate a tendency to keep the *National Formulary* abreast of modern developments in materia medica, while at the same time it continues to serve its principal and very practical purpose as a guide for the pharmacist in the filling of prescriptions. *The National Formulary, Ninth Edition*, should be in the library of every pharmacist and pharmaceutical chemist. However, the information given in the annual editions of *Accepted Dental Remedies* includes the features of the *National Formulary* and *Pharmacopeia* which are essential to dentists, and also provides statements of actions and uses as well as much other helpful information concerning drugs of dental interest. Most dentists will therefore find *Accepted Dental Remedies* an adequate reference text for daily use. However, those dentists who wish to prepare mixtures containing drugs will find the official compendia useful, if not indispensable.—*Donald A. Wallace.*

■ PLASTIC AND RECONSTRUCTIVE SURGERY. Ferris Smith. 895 pages, with illustrations. Index. Price $15. Philadelphia: W. B. Saunders Co., 1950.

This new book was written by one of the world's foremost authorities and teachers in the field of plastic and reconstructive surgery. The book represents the knowledge and information obtained by more than 35 years of serious study, research and practice. The entire work is based upon the philosophy that the surgeon has a dual responsibility to discharge to the patient. This obligation is the restoration of a part to normal, or as nearly normal as possible, including consideration of not only function, but also the cosmetic aspect of the condition. The work is based upon sound, fundamental principles and points out for the first time in surgical literature, the difference between and the desirability of using methods of choice and methods of necessity.

The work is presented as a practical manual designed to aid the surgeon in the accurate evaluation of the disability and to outline a logical step-by-step plan of procedure that will lead to a satisfactory end result from the standpoint of function and appearance.

This manual is intended to be merely a guide and is not intended to stifle the initiative or limit the ingenuity of the surgeon.

Although this text covers the general considerations of plastic and reconstructive surgery, there are many sections in the book which

are of specific interest and value to the oral and maxillofacial surgeon. In Chapter 1, sections on the essentials of reconstructive surgery and the planning of these procedures, along with a discussion of various types of grafts, particularly bone grafts, are of special interest to the oral and maxillofacial surgeon.

Chapter 2 deals with clefts and fractures of the facial bones and is generously illustrated, and discusses in detail fractures of the zygoma and fractures of the nose. In Chapter 3, the subject of shock and its management is nicely treated. Infections of the mouth and neck and their management are adequately covered. Other subjects such as wound healing and intraoral and extraoral prostheses are pertinent to the field of maxillofacial surgery. In Chapter 4, general discussion of operative procedures and treatment covering many maxillofacial conditions and emergency situations are discussed. Chapter 9, on cheiloplasty, discusses the various benign and malignant lesions of the lip, as well as the management of congenital and traumatic deformities. In Chapter 12 developmental deformities of the mandible and maxilla and their surgical correction are discussed and adequately illustrated. This chapter also includes a discussion of the tumors of the maxilla and mandible and facial bones along with a discussion of multiple facial fractures.

The value of this manual is best appreciated when it is used as a guide to the solution and management of the many complicated problems encountered from time to time by the oral and maxillofacial surgeon. This book is highly recommended and should be in the library of every practitioner who deals with any phase of plastic and reconstructive surgery.—*Reed O. Dingman.*

■ Tumors of the Head and Neck. Grant E. Ward and James W. Hendrick. 832 pages, with over 600 illustrations. Price $15. Baltimore: The Williams and Wilkins Co., 1950.

These authors are especially well qualified to discuss this important subject of tumors of the head and neck. The book is well illustrated with over 600 photographs, drawings and charts, including photographs of lesions before and after treatment, photomicrographs of histologic specimens, diagrammatic representations of embryology and anatomy, step by step illustrations of operative technics, many of which show the improved end result. Each section is accompanied by a discussion of the pathology to aid the practitioner in the diagnosis and treatment of the lesions. Discussion of the embryological considerations of the head and neck are included in order to give a better understanding of the types of tumors encountered in these regions.

An unbiased comparison of the results of surgery and roentgenology are based on the authors' many years of experience. The importance of biopsy as a diagnostic aid is adequately covered. Benign and malignant tumors of various parts of the head and neck are discussed in separate chapters. These discussions include information on etiology, clinical behavior, prognosis, metastases, operative technics, case histories, diagnosis and treatment.

Inasmuch as the oral surgeon has an opportunity to observe the exposed areas of the skin of the head and neck, the discussion of tumors of the skin should be of general interest. Of special interest to the oral surgeon, is Chapter 5, "Benign Tumors and Premalignant Lesions of the Lips." Most of the common lesions are shown in clearcut photographs and are accompanied by photomicrographs. The surgical technics for management and the end results are clearly shown. The benign tumors and premalignant lesions of the oral cavity are covered in Chapter 7. The malignant soft tissue tumors of the oral cavity, including the buccal mucosa, the tongue and floor of the mouth and palate, are covered in Chapters 8 and 9. Bone lesions involving the maxilla and mandible and the methods of diagnosis and treatment of both benign and malignant lesions with a discussion of their pathogenesis, histology, clinical and roentgenographic findings are concisely and accurately given.

The final chapter of the book is devoted to rehabilitation, including reconstructive surgery of soft tissues, reconstruction of the mandible and the use of grafts in the reconstruction of the bony framework of the face. A special section

on prosthetic reconstruction of the mouth and face is included, with another section on stabilization of the mandibular fragments after partial resection.

This work on tumors of the head and neck is a comprehensive and thorough survey of the entire problem, and is a book that should be included in the library of every oral surgeon.—*Reed O. Dingman.*

■ NEWER CONCEPTS OF INFLAMMATION. Valy Menkin. 145 pages with 81 illustrations, one in color. Index. Price $3.50. Springfield, Ill.: Charles C Thomas, 1950.

This monogram essentially represents supplementary data to an earlier publication by this author, *Dynamics of Inflammation*, published by the Macmillan Company in 1940. The text is taken from four lectures presented before the Midwest Seminar of Dental Medicine at Bailey's Harbor, Wisconsin, September 19 to 23, 1948.

The book includes a preface and five chapters. At the conclusion of each of the first four chapters the author has summarized the contents. The fifth chapter is titled "Recapitulation and Conclusions." It is evident from the extensive bibliography that a thorough survey was made of the literature. An index to authors and a complete subject index also are included.

A valuable feature is the balanced presentation of material. The amount of space allotted to the various topics is in good proportion to their clinical significance. One is impressed with the fact that the author, a recognized authority on inflammation, speaks with convictions arising from a tremendous clinical and laboratory experience. The language is concise and clear and the description is methodical and detailed.

The book is well apportioned with excellent sketches, photographs and photomicrographs. The material is presented in an understandable and interesting manner.

Dr. Menkin is to be congratulated on having compiled so much information in such a small volume. Anyone who wishes a comprehensive and thoroughly intelligible survey of the newer concepts of inflammation cannot do better than to study this work. It is highly recommended.—*E. Alan Tieban.*

■ TEXTBOOK OF BIOCHEMISTRY. Benjamin Harrow. Fifth edition. 558 pages with illustrations. Index. Price $6. Philadelphia: W. B. Saunders Co., 1950.

This is a very good medium-length general text in biochemistry. The large proportion of the text which should be of interest to practicing dentists is worthy of comment.

The 258 pages which are devoted to chemotherapy, digestion, enzymes, foods, vitamins, hormones, the blood and metabolism of carbohydrates are especially pertinent to dental practice.

Newer developments are discussed extensively. The text is interesting and readable. It can be used for occasional reference or, by systematic and not too strenuous reading, can provide a pleasant refresher course in some of the most vital scientific aspects which underlie the practice of dentistry. It will be a useful addition to the personal library of any dentist.—*Donald A. Wallace.*

■ AN EVALUATION OF PHISODERM G 11 AND A LIQUID SOAP CONTAINING G 11 WHEN USED AS THE PREOPERATIVE SCRUB. J. A. Dull and others. Surg., Gynec. & Obst. 91:100, July, 1950.

The bacterial flora of the skin are reduced to a greater extent if G 11 is incorporated with a bland soap used for surgical scrubbing. To prove this experiments, under actual conditions existing in the operating room, were performed using the following materials: (1) a bland cake soap, (2) a liquid soap containing two per cent G 11; (3) Phisoderm G 11 (a G 11 detergent). The participants were members of a hospital surgical staff and had used no G 11 soap for at least five days before experimental observations were made.

"Specimens for bacterial cultures were obtained from separate one minute scrubbings performed by each subject. These one minute scrubbings were carried out immediately preceding and either following the preoperative scrub or following operation." The hands were scrubbed for one minute with sterile water and brushes, and then washed with sterile water. Specimens of the wash and scrub water were cultured by a standard method.

Ten minute scrubs were employed with the bland cake soap and a 70 per cent alcohol hand dip was used after the postscrub culture was taken. When G 11 was employed 2 cc. of Phisoderm G 11 or G 11 liquid soap was applied over both hands and left in contact for one minute. This was rinsed and the same reapplied and scrubbed for two minutes. After the postscrub cultures were taken, an aqueous solution of Zephiran (1:1,000) was used for hand dip.

The degerming effect produced by a single three minute scrub with liquid soap G 11 is as great as a ten minute scrub with a bland cake soap, when comparing the bacterial counts at the end of two hours of operating. Immediate postscrub cultures show that a three minute scrub with Phisoderm G 11 was equivalent to a ten minute scrub with cake soap. The number of bacteria increased significantly during an operation when a bland cake soap was used; the opposite was true when Phisoderm G 11 scrub was used. The continued use of Phisoderm G 11 decreases the postoperative bacterial counts to a far greater extent that does cake soap.—*H. Bloom.*

■ FATALITIES FOLLOWING CURARE. Richard Foregger. J.A.M.A. 142:1344, April 29, 1950.

Curare has become especially useful in anesthesiology for augmenting relaxation during surgical operations and in psychiatry for softening the convulsions of shock therapy. A few scattered reports of fatalities following the use of curare have appeared in the literature. Writers have stressed the dangers of apnea subsequent to curarization and have emphasized methods of prevention. Some of the deaths following the use of curare may be due to a side action of the drug and may not be preventable by present methods of treatment. In this type of accident, the usual resuscitative measures are carried out to no avail. Several cases of fatalities are reported.

Curare should not be used in myasthenia gravis. Patients with this disease are extremely sensitive to the drug and may show profound depression with small doses.

It has been known for many years that curare will produce bronchoconstriction. The bronchospasm produced is similar to that produced by histamine and may be prevented by the administration of antihistamine drugs. The respiratory complications of curare may be relieved by intravenous administration of procaine hydrochloride.—*H. Bloom.*

■ A Speech Training Program for Cleft Palate Children. T. G. Blocher, Jr., and Virginia Blocher. Postgrad. Med. 7:439, June, 1950.

"It has been estimated that 1 out of approximately 1,000 children in this country is born with cleft palate deformity either with or without associated cleft lip." The optimum time for cleft palate surgery is about two years, or before many speech habits are formed. Fortunately, at the present time, most patients are receiving surgical treatment early in life.

Speech training should be instituted immediately following the operation, but unfortunately, this has been neglected in many instances. Most parents and even a few surgeons fail to realize that establishment of adequate speech apparatus does not presage normal enunciation of sounds. Since there are not enough trained specialists, responsibility for speech training must rest with the parents. The University of Texas Medical School has set up a clinic to teach parents how to recognize and conduct a program of home speech training. The mother is given instructions and is aided in carrying them out. Some mothers may be poorly qualified and, if such is the case, social agencies are contacted to help arrange some type of speech therapy outside the home. Speech therapy of this type is an important part in the complete rehabilitation of the patient.—*B. Cook.*

■ Removal of Sebaceous Cysts by Electrosurgical Means. Sidney J. Robbins and Nathan Pensky. Arch. Dermat. & Syph. 62:411, September, 1950.

It was the purpose, out of 250 cases of sebaceous cysts treated, to devise a technic which would eliminate the lesion permanently in the greatest percentage of cases, minimize scarring and entail the least amount of time and discomfort to the patient. The procedure found most successful was as follows: The surface of the lesion was cleansed and a needle of the active electrode pole was inserted into the softest part of the cyst, penetrating only a few millimeters below the surface of the skin. No anesthetic was used. "The monopolar diathermy current was used exclusively, with a low spark sufficient to obtain a blanching of the skin around the needle." If pain was experienced the current was temporarily cut off. The current was cut before removal of the needle to avoid too large a slough and too great a necrotizing effect in the overlying skin, thus resulting in the smallest scar possible. A crust replaced the blanched area and was allowed to remain *in situ* for about one week, after which time it was removed and the entire contents of the cyst with the sac were evacuated. A minute depressed pit is the usual end result.—*J. Paul.*

■ The Use of Pentothal Sodium-Pentobarbital Sodium Combination in Prolonged Surgical Procedures. Hugh Farquharson and Frank J. Murphy. Anesthesiology 11:489, July, 1950.

Pentobarbital sodium in combination with pentothal sodium was introduced to answer the problem of smooth maintenance of prolonged anesthesia. The amount of each used is: Pentothal, 0.5 Gm., and pentobarbital sodium, 0.25 Gm., in a total volume of 25 cc. The mixture is injected and administered in small doses until the patient exhibits loss of cortical reflex and relaxation of the jaw, usually after 15 to 25 cc. of the mixture has been given. After the patient is asleep nitrous oxide and oxygen is administered by face mask to act as a benign basic agent for maintenance.

The patients should be lightly sedated before coming to the operating room. When Pentothal alone is used the patient awakens rapidly when administration is discontinued, thus requiring further sedation and narcotics. The addition of pentobarbital sodium gives a prolonged sedative effect, carrying the patient past the peak of the reaction period.

If intubation is planned, the throat down to and including the epiglottis should be sprayed with Pontocaine prior to induction. Breath holding and prolonged spasm, as may be seen with Pentothal alone, do not follow administration of Pentothal-pentobarbital sodium solution. If the patient is particularly

robust, curare, in 60 to 80 unit doses, can be administered to increase relaxation of the jaw and laryngeal muscles. During the induction period, prior to intubation, oxygen is administered routinely by face mask.

The only contraindication for its use is with cases of known hepatic damage or functional impairment, since pentobarbital sodium is broken down in the liver.—*H. Bloom.*

■ ANTIBIOTICS: YESTERDAY, TODAY, TOMORROW. Charles S. Keefer. Ann. Int. Med. 33:582, September, 1950.

Ten years ago antibiotics were nonexistent. Today there are many, their appearance being made in the following order: tyrothricin, penicillin, streptomycin, bacitracin, polymyxin, aureomycin, chloromycetin, neomycin and, most recently, terramycin. These agents interfere in some way with the normal growth and metabolic processes of the bacteria, and have the added advantage in that more than one group of bacteria is attacked by a single antibiotic. Organisms resistant to one antibiotic are usually sensitive to another. Bacitracin may be used in penicillin resistant organisms, since it has the same general bacterial spectrum. Terramycin has the same general bacterial spectrum as that of aureomycin and chloromycetin.

Some strains of bacteria can be made resistant to almost all antibiotics, provided the organisms are exposed to the antibiotic long enough. For this reason it is important to treat the infection with adequate doses of antibiotics as promptly as possible. The question of synergistic effects of the antibiotics needs rigorous experimental study.

Antibiotics can produce sensitivity and when they do there is no demonstrable antibody present in the circulating blood as seen in other types of sensitivity reactions. Penicillin sensitivity manifests itself usually as a contact dermatitis. "Reactions occur most frequently in patients who have had several courses of penicillin." Sensitivity cannot always be predetermined by a skin test, and once the reaction has occurred antihistamine drugs may or may not control the reactions. Sensitivity is most often noted following the local application of penicillin ointment to the skin. Once the patient has become sensitized there may be accelerated reaction upon the next injection or he may have no reaction, the time elapsing between injections being important.

Skin eruptions may occur following the use of streptomycin, but are often transitory and disappear with continued medication. More serious reactions following administration of streptomycin are the development of eighth nerve disturbances that may ultimately lead to deafness.

The treatment of drug allergy consists of withdrawal of the drug and symptomatic therapy. The duration of the symptoms vary from a few days to several weeks. Symptomatic treatment has improved with the introduction of antihistamine drugs. These drugs relieve the skin eruptions and itching. If a previous known reaction to a drug has occurred it should not be administered again without precautions, that is, a small test dose first.—*J. Paul.*

■ A NEW ABSORBABLE HEMOSTATIC BONE WAX. John R. Geary and Virginia K. Frantz. Ann. Surg. 132:6, December, 1950.

Bone wax, as formulated in 1892, consists of seven parts beeswax, one part almond oils, and 1 per cent salicylic acid. This substance is effective as a hemostat only by virtue of its tamponade action, is not soluble in body fluids and remains at the site of implantation for long periods of time. Acting as a foreign body, it tends to cause a low grade inflammatory reaction in the adjacent tissues and tends to promote infection.

In an effort to improve upon this inadequate substance, a bone wax was developed in an attempt to duplicate the physical properties of the older composition but which would be specifically hemostatic and absorbable. After testing a number of samples, the following formula was accepted: 60 per cent polyethylene glycol 1540; 15 per cent polyethylene glycol 300; 25 per cent oxidized cellulose. The oxi-

dized cellulose is the active component and a mixture of polyethylene glycols of high molecular weight serve as the vehicle.

Laboratory tests with rats indicated that the new material is much less irritating to the tissues than ordinary bone wax and is completely absorbed within three hours. Its healing properties apparently have not proved as successful as the afore-mentioned results, though the delay does not seem to be any greater than that caused by the older bone wax. No ill effects or complications have been noted which could be attributed to the material.

The authors contend that it is not to be used in accidental fractures, where early bone repair is the first consideration, or in weight bearing bones, but offer no specific explanation for these recommendations.

This substance has proved of tremendous value at the Neurological Institute of New York since the writing of this article. On this basis, it is conceivable that it may be indicated in certain types of oral surgical and exodontia procedures. At any rate, it certainly seems to be worth an intensive trial.—*Bruce L. Douglas.*

■ Fibromyxoma of the Mandible: Report of Two Cases. N. W. Wawro and J. Reed. Ann. Surg. 132:6, December, 1950.

Two cases of fibromyxoma, one of the mandible and the other of the maxilla, are reported and described in detail. These growths represent a rare and benign tumor, radiolucent roentgenographically and of unknown etiology.

It is pointed out that many mesoblastic tumors, such as fibromata, lipomata, and so forth, often undergo myxomatous changes under the influence of chronic irritation or degenerative change due to a diminished blood supply. One investigator feels that these tumors probably arise from the nerve sheath and others suggest that myxomatous degeneration of odontogenic fibromata arises from the mesenchymal portion of the tooth germ in the upper and lower jaws.

The tumors attain large size, are often poorly encapsulated and are of a homogeneously firm multilobular consistency. The two cases presented demonstrate also the infiltrative nature of this growth. Mixed tumors of salivary glands which often contain fibromyxomatous tissue frequently present similar characteristics of poor encapsulation and a tendency for recurrence following enucleation or limited or partial excision.

Surgical intervention is usually indicated because of the pressure on surrounding vital structures with concomitant cosmetic deformity. It is unlikely that radiation therapy would be effective in eradicating the lesion because it is composed of well differentiated tissue.

The limited number of case reports of fibromyxoma of the jaws demonstrates a preponderance in young adults. This growth most frequently simulates the dentigerous cyst.—*Bruce L. Douglas.*

■ Tobacco Smoking Habits and Cancer of the Mouth and Respiratory System. Clarence A. Mills and Marjorie Mills Porter. Cancer Research. 10:539, September, 1950.

Lung cancer, in recent years, has shown a more rapid increase than all the other neoplastic diseases. Its incidence is directly related with the dirtier sections of cities, being more prevalent with increasing density of air pollution. "Carcinogenic compounds have been isolated from the tarry substances of both coal and tobacco smoke." Since the incidence is more prevalent in men than in women the possible contributing role of tobacco smoke was considered.

Some of the larger cities were used with a representative cross section of each city. The findings were as follows: There is a definite association of pipe or cigar usage with cancers of the buccal tissues; cigarette smoking habits do not display this correlation. All forms of smoking, especially cigarette, are significantly higher among victims of respiratory tract cancer. Ninety-three per cent of all lower respiratory tract cancer victims and 90 per cent of upper respiratory tract cancer victims were smokers. The incidence of buccal cancer and respiratory tract cancer in nonsmokers is only one-fourth as great as among smokers.—*J. Paul.*

■ An Unusual Case of Paget's Disease. Peter B. Wright. J. Bone & Joint Surg. 33A: 239, January, 1951.

A fascinating case demonstrating the most extreme eventualities in the strange progression of events peculiar to Paget's disease are described in lucid detail.

Osteitis deformans was considered by Paget to be an inflammatory skeletal disease; it has since been found to be accompanied by a variable increase in vascularity. In this particular case, the entire systemic picture matched the commonly associated symptomatology of Paget's disease to the letter. The blood picture showed no change in the serum calcium or phosphorus, but a definite elevation of serum alkaline phosphatase, depicting osteoblastic activity; all skeletal characteristics, including decalcification of bone, considerable bone production and other osseous deformities presented a typical advanced picture of the disease.

The maxillofacial aspects of the disease are particularly exaggerated and of interest to the oral surgeon. There was an obvious enlargement of the cranial and facial bones and the mandible was extremely oversized and protruding. The nares had flattened and the bridge and septum had almost disappeared. The alveolar processes showed a tremendous increase in size with the oral mucosa stretching tightly over the bone. The oral cavity was almost completely occluded by enlargment of the maxilla, the palate and the mandible. Autopsy showed a similar narrowing of the oropharynx. A few widely spaced "peg teeth" projected from the smooth surface of the mandibular mass. Roentgenographic study revealed a typical moth eaten skull with thickened calvarium; there was generalized deformity and pain in the bones. A peculiar aspect of this case was the absence of a lamina dura, which establishes the possibility of a mild co-existing hyperparathyroidism, although other tests do not substantiate the premise.

Since immobilization favors decalcification, removing the stimulus of bone production, the great resorption can be attributed to the patient's having been bedridden for two years before death. The effort of the patient to eat and swallow must have been great, with considerable stress resulting from the action of the muscles of mastication and overproduction of osseous tissues in the region of the mandible, maxilla and the temporal lobes of the skull. The engorgement of facial and temporal vessels seem to be in direct ratio to bony proliferation.

Histopathologic study showed that the subperiosteal and cortical bone had been replaced or had thickened, while the diploe of the cranium had been obliterated. No pre-existing bone remained in the long bones. It had been replaced by poorly calcified, irregular trabeculae of osteoid tissue, which lay in cellular and acellular fibrous tissue. The oldest osteoid trabeculae had undergone osteoclastic absorption. Some areas were composed of cellular fibrous tissue and contained many osteoclasts which had absorbed the few remaining fragments of osteoid tissue. Microscopic cysts were prominent in many areas and the pattern of the cells in the bone structure resembled osteitis fibrosa.—*Bruce L. Douglas.*

■ Researches on a Circulating Anticoagulant in a Hemophiliac. S. Van Creveld, P. G. Hoorweg and M. M. P. Paulssen. Blood 6:233, March, 1951.

A number of investigations were made in a hemophiliac who had become refractory to treatment with whole blood, plasma and plasma fractions. This refractory condition was traced to the presence of a circulating anticoagulant. By fractionation of the plasma it was determined that the anticoagulant was associated with the pseudoglobulin fraction of the plasma, and acted by inhibiting the action of antihemophilic globulin (coagulation globulin) present in natural blood. The antihemophilic globulin, however, was not physically altered by the anticoagulant and could be reprecipitated without loss of its antihemophilic properties.

The anticoagulant did not inhibit prothrombin, thromboplastin, or fibrinogen. It was unrelated to the lipid antithromboplastin or to heparin and did not appear to be an antibody. —*J. K. Paul.*

Announcements

■ Frank W. Rounds, Former President of A.S.O.S., Dies

Frank W. Rounds, former president of the American Society of Oral Surgeons, the Massachusetts Dental Society, the American Academy of Dental Science, and the New England Society of Oral Surgeons, died May 16 at his home in Boston.

Before moving to Boston in 1922, Dr. Rounds practiced dentistry in Maine and in Kentucky, and served on the faculty of the University of Louisville dental school, from which he was graduated in 1910. For his service to dentistry he received the Fones medal award of the Connecticut Dental Society in 1948, and membership in Phi Beta Kappa in 1939. He also held honorary memberships in the Tennessee, Kentucky, Mississippi and Maine Dental Societies. He is survived by his wife and two sons, one of whom, Charles E. Rounds, practices dentistry in Boston.

■ Three Year Term of Office for Journal of Oral Surgery Editorial Board

The Board of Trustees of the American Dental Association, at its March 1951 meeting, established a three year term of office for members of the editorial board of the Journal of Oral Surgery. The following appointments were made, retroactive to January 1, 1951: Don H. Bellinger, Detroit, H. Newman Brownson, Hollywood, Calif., and G. Thaddeus Gregory, Indianapolis, terms to expire in 1952; James R. Cameron, Philadelphia, L. M. Fitzgerald, Dubuque, Ia., and Lon W. Morrey, Chicago, terms to expire in 1953; Reed O. Dingman, Ann Arbor, Mich., and William E. Durbeck, San Antonio, Tex., terms to expire in 1951.

■ Twelfth Congres Francais de Stomatologie

The twelfth French Congress of Stomatology will be held in Paris, October 8-13, 1951, at the Eastman Institute. The executive board consists of: president, Dr. Rene Vincent; vice-presidents, Dr. Vilenski and Dr. Carvallo; general secretary, Dr. P. Friez; treasurer, Medicin-General Ginestet.

Two reports will be presented: "Chronic Swelling of the Parotid Gland," by Drs. Hennion and Bataille; "The Treatment of Pyorrhea," by Dr. Friez. Two questions will be discussed: "Hemostasis in Dentistry," by Professor Agrege Carlier and Dr. Goudaert; "Surgical Treatment of Oral Sinuses," by Drs. Jacowski and Grignon.

The morning hours of the Congress will be spent at the hospital and in the Institute of Stomatology of the College of Medicine of Paris where clinics and demonstrations of modern technics will be presented. There will also be an exhibit of professional equipment, pharmaceutical products and recent books.

The registration fee is 5000 francs. Address correspondence to Dr. Friez, 42 rue Notre-Dame de Champs, Paris 6, France.

■ Middle Atlantic Society of Oral Surgeons Holds First Meeting

The Middle Atlantic Society of Oral Surgeons, with a charter membership of thirty, had its first meeting in January, 1951. Officers were elected as follows: president, Charles L. Smith; vice-president, Harold W. Krogh; secretary, Karl H. Wood; editor and program chairman, Sterling G. Mead.

The Society plans to meet in January, April, July and October. The membership is composed of oral surgeons from Maryland, West Virginia, Delaware, District of Columbia, southern Pennsylvania and northern Virginia.

■ New York Institute of Clinical Oral Pathology

The New York Institute of Clinical Oral Pathology announces a meeting in celebration of its one hundred and fiftieth monthly conference, to be held in Hosack Hall, the New York Academy of Medicine, 2 East 103rd Street, October 29, 1951, at 8:30 P.M. The meeting will be open to the dental, medical and allied professions.

Hans Selye, professor and director of the Institute of Experimental Medicine and Surgery, University of Montreal, will be the essayist on the subject, "Role of General Adaptation Syndrome in Oral Pathology, With Special Reference to Hormone Treatment."

■ University of Pennsylvania Announces Postgraduate Courses

The University of Pennsylvania has announced a program of postgraduate courses for 1951, to be conducted on both a week day and a full time basis. Subjects include dental surgery and anesthesia, mouth rehabilitation, oral cancer, oral diagnosis and roentgenology, and roentgenologic technic and interpretation.

Fees range from $75 to $300 and enrollment is limited. Detailed information may be obtained from the Director of Postgraduate Courses, School of Dentistry, University of Pennsylvania, 4001 Spruce Street, Philadelphia 4.

■ Southeastern Society of Oral Surgeons Elects Officers

At the second annual meeting of the Southeastern Society of Oral Surgeons held in New Orleans, March 2-3, 1951, the following officers were elected: president, Thomas L. Blair, Winston-Salem, N. C.; president-elect, Irwin Hyatt, Atlanta, Ga.; vice-president, Frank Jordan, Louisville, Ky.; editor, George W. Matthews, Birmingham, Ala.; executive board, Wilbur Davis, Orlando, Fla., and Leopold Levy, New Orleans.

The Journal of Oral Surgery was designated as the official publication of the Society.

Place and date of the 1952 meeting will be announced later.

■ Eighth Annual Seminar for the Study and Practice of Dental Medicine

Leading dental-medical practitioners from throughout the United States will participate in the eighth annual Seminar for the Study and Practice of Dental Medicine, which will be held October 28 through November 1, 1951, at the Desert Inn, Palm Springs, Calif.

Guest faculty of the program will include nationally recognized medical researchers and specialists. Faculty members will participate in a series of lectures on current medical findings as related to dental health. Informal small group discussions will also be conducted during the meeting.

The final day of the Seminar will be devoted to a forum meeting designed to correlate the formal lectures and discussions of the week to the practical application of the problems of dentistry.

Detailed information may be obtained from Miss Marion G. Lewis, Executive Secretary, Room 200, Hooper Foundation, University of California Medical Center, San Francisco 22.

■ Midwestern Society of Oral Surgeons Elects Officers

At the meeting of the Midwestern Society of Oral Surgeons in St. Louis, April 2, 1951, the following officers were elected: president, Ralph Rode, St. Louis, Mo.; president-elect, G. Farrell Webb, Kansas City, Mo.; vice-president, Don Woodard, Kansas City, Mo.; secretary-treasurer, Lester Jasper, St. Louis, Mo.

■ University of Louisville, School of Dentistry, Offers Course in Anesthesia

A four week course in anesthesia for dentists, offered by the department of oral surgery, School of Dentistry, University of Louisville, is open to two applicants at each period.

Principles of general and conduction anesthesia, stressing application to dental practice, will be taught. Mornings will be spent in the operating rooms of the Louisville General Hospital where the student will learn the basic principles of anesthesia, the rationale of premedication, the management of the postoperative period and the treatment of anesthetic emergencies.

Afternoons will be spent in the Oral Surgery Clinic of the Louisville General Hospital where practice in regional, local and general anesthesia for oral surgery will be obtained.

For further information write to Office of the Dean, University of Louisville, School of Dentistry, Louisville 2, Ky.

■ Fourth Annual New Orleans Dental Conference

The fourth annual New Orleans Dental Conference will be held at the Roosevelt Hotel, New Orleans, November 11-14, 1951. For further information write the secretary, Dr. M. R. Matta, 629 Maison Blanche Building, New Orleans.

■ University of Minnesota, School of Dentistry, Offers Fellowships and Teaching Assistantships

Fellowships and teaching assistantships are available for a limited number of graduate students in the University of Minnesota, School of Dentistry. Stipends for these appointments range from $1,200 to $3,600 per year, and include tuition exemption. Graduate study programs may be arranged with a major in orthodontics, oral pathology, oral surgery, oral medicine (including periodontia), or restorative dentistry (operative, prosthetics, pedodontia, or endodontia). The courses in these fields vary in length from two to three years. An alternate program in the basic sciences, with special reference to dentistry, leads to a Doctor of Philosophy degree.

Persons interested in these appointments may write for an information bulletin and application form to the Dean of the Graduate School, University of Minnesota, Minneapolis 14.

■ Southern California Society of Oral Surgeons Elects Officers for 1951

At the annual meeting of the Southern California Society of Oral Surgeons, Pasadena, January 12, 1951, the following officers were elected for the year 1951: president, Sheldon I. Brockett, San Diego; president-elect, S. James Vamvas, Huntington Park; secretary-treasurer, Leonard Z. Lyon, Los Angeles.

Editorial communications

■ ORIGINAL COMMUNICATIONS—This journal invites concise original contributions in the broad field of clinical and experimental surgery of the mouth and associated structures, including roentgenology, diagnosis, anesthesia and oral surgical pathology. Articles are accepted for publication with the understanding that they are contributed solely to the JOURNAL OF ORAL SURGERY. All manuscripts are subject to editorial modification. Neither the editors nor the publishers accept responsibility for the views and statements of authors expressed in their communications.

■ MANUSCRIPTS—Manuscripts submitted for publication should be sent to Reed O. Dingman, Editor, 221 North Ingalls Street, Ann Arbor, Michigan.

Manuscripts should be typewritten on one side of the paper only, with double spacing and liberal margins. The author's name and the abbreviated title of the article should appear at the top of each manuscript page. The original should be sent to the editor and a carbon copy retained by the author. Manuscripts will not be returned if accepted for publication.

References should be placed at the end of the article and should conform to the style of the Quarterly Cumulative Index Medicus: viz., name of author, title of article and name of periodical with volume, pages, month and year. They should be numbered and should appear in the same order as that of the superior figures inserted in the appropriate positions in the text.

■ ILLUSTRATIONS—Illustrations accompanying manuscripts should be unmounted and numbered. The author's name should appear on the margin or back.

Authors should insert figure numbers at appropriate places in the text. The original drawings, or glossy print photographs of them, should accompany the manuscript. Legends for illustrations are to be typewritten in a separate list with numbers corresponding to those on the photographs and drawings.

A reasonable number of halftone illustrations will be reproduced free of cost to the author, but special arrangements must be made with the editors for color plates, elaborate tables or extra illustrations. Copy for zinc cuts (such as pen drawings and charts) should be drawn and lettered in India ink or with black typewriter ribbon (carbon paper placed with carbon against back of sheet for bolder type). Ordinary blue or colors will not reproduce. Only good photographic prints or drawings should be supplied for halftone work.

■ CASE REPORTS—Case reports will constitute an important department of the journal and the editors welcome case reports that are of unusual clinical value or that present exceptional conditions of interest to dental surgeons.

■ EXCHANGES—Letters, exchanges, reprints and all other communications relating to the JOURNAL OF ORAL SURGERY should be sent to the American Dental Association, 222 East Superior Street, Chicago 11.

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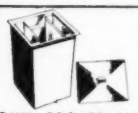

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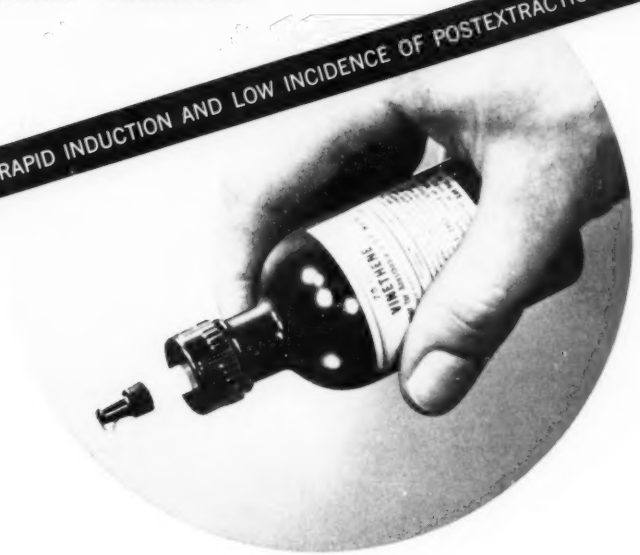

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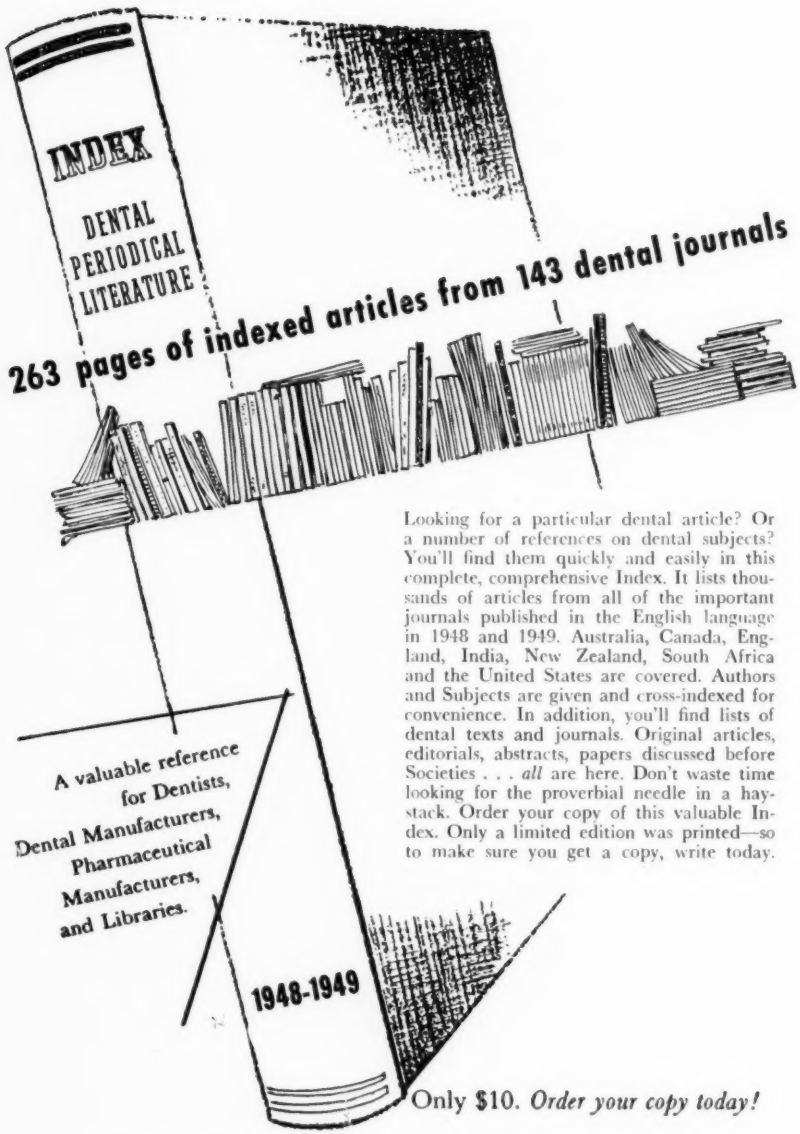

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